

FExNet 2026

Collated SAQs: Vascular Emergencies

QUESTION BOOKLET

22 short-answer questions covering the ACEM Fellowship vascular curriculum.

22 questions • 218 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 | Stanford Type A Aortic Dissection (12 marks)

A 58-year-old man presents to your emergency department with sudden-onset severe interscapular pain radiating to the chest and back, associated with diaphoresis and a brief syncopal episode 90 minutes ago. Past history: long-standing untreated hypertension, smoker. On arrival: Glasgow Coma Score 14, heart rate 105 beats per minute, blood pressure 80/45 millimetres of mercury on the right arm and 130/85 on the left arm, respiratory rate 24, peripheral oxygen saturation 94 percent on room air. Examination: diastolic murmur at the right sternal edge, muffled heart sounds, left-sided hemiparesis. Twelve-lead electrocardiogram shows ST-elevation of 2 millimetres in leads II, III and aVF. Bedside echocardiogram demonstrates a pericardial effusion with right ventricular collapse during diastole.

a) Name 4 clinical features that support a diagnosis of Type A aortic dissection. (4 marks)

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

c) List 3 differential diagnoses. (3 marks)

Question 2 | Stanford Type B Aortic Dissection (11 marks)

A 64-year-old man presents to your emergency department with severe interscapular and lumbar back pain that started suddenly 4 hours ago while gardening. Past history: hypertension, hypercholesterolaemia. On arrival: Glasgow Coma Score 15, heart rate 95 beats per minute, blood pressure 195/110 millimetres of mercury (similar both arms), respiratory rate 18, peripheral oxygen saturation 97 percent on room air, afebrile. Examination: normal heart sounds, no murmur, no neurological deficit, all peripheral pulses palpable and symmetrical. CT angiography chest/abdomen/pelvis confirms an uncomplicated Stanford Type B aortic dissection with the intimal tear originating just distal to the left subclavian artery.

a) Define Stanford Type A and Type B dissection AND state the implication for management. (3 marks)

b) Outline 5 components of medical management for uncomplicated Type B dissection. (5 marks)

c) List 3 indications for TEVAR (thoracic endovascular aortic repair) in Type B dissection. (3 marks)

Question 3 | Acute Limb Ischaemia (12 marks)

A 74-year-old man presents to your outer-metropolitan emergency department with severe sudden-onset right leg pain 4 hours ago. There is no history of trauma. Past history: atrial fibrillation (anticoagulation refused), hypertension. On arrival: Glasgow Coma Score 15, heart rate 110 irregular, blood pressure 145/80, respiratory rate 18. Examination of the right leg: cool, pale, mottled below the knee, tenderness on calf compression, paraesthesia over the dorsum of the foot, weakness of dorsiflexion (power 3/5), absent dorsalis pedis and posterior tibial pulses by palpation and Doppler. The left leg has normal pulses. Your hospital does not have vascular surgery on site.

- a)** List the 6 Ps of acute limb ischaemia AND classify this patient per the Rutherford criteria. (4 marks)

- b)** Outline 5 immediate management steps while arranging transfer to a vascular centre. (5 marks)

- c)** Differentiate embolic and thrombotic causes (3 features). (3 marks)

Question 4 | Lower Limb Deep Vein Thrombosis (10 marks)

A 45-year-old woman presents to your emergency department with a 4-day history of progressive right calf swelling and pain. She returned 5 days ago from an 18-hour flight from Europe. Past history: combined oral contraceptive use for 8 years. On arrival: alert and well, heart rate 88, blood pressure 130/80, afebrile. Examination: right calf 4 centimetres larger in circumference than left at 10 centimetres below the tibial tuberosity, mild pitting oedema, calf tenderness, mildly erythematous, no superficial varicosities. D-dimer 2200 (reference <500). Compression ultrasound confirms thrombus extending from the popliteal vein into the common femoral vein with non-compressibility.

a) List 4 components of the Wells score for DVT AND state how it guides workup. (4 marks)

b) Outline 4 management decisions for this patient. (4 marks)

c) Name 2 considerations for DVT in pregnancy. (2 marks)

Question 5 | Intermediate-Risk (Submassive) Pulmonary Embolism (11 marks)

A 55-year-old woman presents to your emergency department with sudden-onset pleuritic chest pain and dyspnoea following a 12-hour drive home from a family holiday yesterday. Past history: obesity (BMI 38), recent left knee arthroplasty 4 weeks ago. On arrival: Glasgow Coma Score 15, heart rate 115 beats per minute, blood pressure 115/70 millimetres of mercury, respiratory rate 26, peripheral oxygen saturation 91 percent on room air, afebrile. Bedside echocardiography shows a dilated and hypokinetic right ventricle with septal flattening. CT pulmonary angiography confirms bilateral large lobar pulmonary emboli. Troponin 80 nanograms per litre (reference <30), BNP 480, lactate 1.8.

a) Classify this PE per the ESC 2019 categories AND explain why. (3 marks)

b) Outline 5 management priorities, including indications for thrombolysis or alternatives. (5 marks)

c) List 3 contraindications to thrombolysis. (3 marks)

Question 6 | Hypertensive Emergency (11 marks)

A 56-year-old man presents to your emergency department with shortness of breath and central chest pain. Past history: hypertension recently diagnosed, on perindopril 5 milligrams and amlodipine 5 milligrams daily, but admits poor adherence. He has measured his blood pressure at home as 210/110 millimetres of mercury. He is convinced he is going to have a stroke. On arrival: Glasgow Coma Score 15, heart rate 105, blood pressure 215/120 right arm and 212/118 left arm, respiratory rate 22, peripheral oxygen saturation 94 percent on room air, bibasal crackles. ECG: sinus rhythm with left ventricular hypertrophy and lateral T-wave inversion. Chest X-ray: mild pulmonary venous congestion with normal mediastinum. Urinalysis: protein 2+, blood 1+.

a) Define hypertensive emergency vs urgency AND list 4 end-organ manifestations demonstrated in this patient or that should be sought. (4 marks)

b) Outline 5 management priorities. (5 marks)

c) Name 2 drugs commonly used and 1 contraindication of each. (2 marks)

Question 7 | Symptomatic Carotid Artery Stenosis and Transient Ischaemic Attack (10 marks)

A 68-year-old man presents to your emergency department after a transient episode of right-sided weakness and expressive dysphasia lasting 30 minutes, occurring 4 hours ago. He now has no neurological deficit. Past history: hypertension, hypercholesterolaemia, 40 pack-year smoking history. On arrival: Glasgow Coma Score 15, heart rate 78 sinus rhythm, blood pressure 165/95, respiratory rate 16. Examination: a carotid bruit is audible over the left bifurcation. ECG: sinus rhythm. CT brain plain is normal.

a) Calculate the ABCD2 score AND state the implication. (3 marks)

b) Outline 5 management priorities. (5 marks)

c) Name 2 'TIA mimics' to exclude. (2 marks)

Question 8 | Chronic Limb-Threatening Ischaemia (10 marks)

A 78-year-old man with type 2 diabetes mellitus, hypertension and 50 pack-year smoking history presents to your emergency department with a non-healing ulcer on the right great toe and rest pain in the foot for the past 3 weeks. The rest pain is worse at night and improved by hanging the leg over the bed. Past history includes intermittent claudication at 50 metres for 2 years. On arrival: alert, heart rate 78, blood pressure 150/85, afebrile. Examination: 1.5 centimetre punched-out ulcer over the right great toe with exposed bone, surrounding erythema, malodorous, mild crepitus; cold right foot, capillary refill 5 seconds, absent dorsalis pedis and posterior tibial pulses by Doppler, ankle-brachial index 0.3.

a) Define chronic limb-threatening ischaemia AND state the Rutherford / Fontaine stage. (3 marks)

b) Outline 5 management priorities. (5 marks)

c) List 2 features of diabetic foot infection complicating CLTI. (2 marks)

Question 9 | Phlegmasia Cerulea Dolens (9 marks)

A 56-year-old man with metastatic pancreatic cancer presents to your emergency department with sudden severe left lower limb swelling and pain over the past 8 hours. On arrival: Glasgow Coma Score 14, heart rate 130 beats per minute, blood pressure 88/55 millimetres of mercury, respiratory rate 26, peripheral oxygen saturation 92 percent on 6 litres oxygen. Examination: the entire left lower limb is massively swollen from groin to foot, deeply cyanotic and purple, marked tenderness, tense compartments, blistering of the skin, paraesthesia of the foot, sensory loss, weakness of dorsiflexion. Bilateral peripheral pulses are present at presentation but the ankle pulses on the left are now becoming weak. Compression ultrasound confirms occlusive thrombus extending from common iliac to popliteal veins.

- a)** Define phlegmasia cerulea dolens AND name 2 features that distinguish it from uncomplicated proximal DVT. (3 marks)

- b)** Outline 4 management priorities. (4 marks)

- c)** List 2 additional considerations specific to cancer-associated thrombosis. (2 marks)

Question 10 | Upper Limb Deep Vein Thrombosis (Paget-Schroetter and Catheter-Related) (9 marks)

A 24-year-old elite swimmer presents to your emergency department with painful swelling of the right (dominant) arm over the past 24 hours, with prominent venous distention over the chest wall. There is no recent trauma. On arrival: Glasgow Coma Score 15, heart rate 78, blood pressure 125/70, afebrile. Examination: marked swelling of the entire right arm with cyanotic discoloration, prominent collateral chest wall veins, mild tenderness. Compression ultrasound shows non-compressible thrombus extending from the right subclavian and axillary veins.

a) State the likely diagnosis AND name 2 predisposing factors. (3 marks)

b) Outline 4 management priorities. (4 marks)

c) Name 2 differentials for unilateral upper limb swelling. (2 marks)

**Question 11 | Bilateral Renal Artery Stenosis and Flash Pulmonary Oedema
(10 marks)**

A 78-year-old woman is brought to your emergency department with sudden-onset severe dyspnoea, now her third presentation in 6 months with similar episodes that resolved with diuresis. Past history: hypertension, smoking, peripheral vascular disease. Medications: perindopril 8 milligrams, amlodipine 10 milligrams, metoprolol 50 milligrams, frusemide 40 milligrams. On arrival: Glasgow Coma Score 14, heart rate 110, blood pressure 220/110, respiratory rate 32, peripheral oxygen saturation 78 percent on room air. Examination: diffuse bilateral crepitations, abdominal bruit. CXR: bilateral 'bat-wing' alveolar infiltrates. Bloods: creatinine 280 micromoles per litre (baseline 180), potassium 5.5, BNP 1800. Bedside echo: preserved LVEF 60%, no regional wall motion abnormality.

a) Name 4 features supporting renovascular hypertension with 'flash' pulmonary oedema. (4 marks)

b) Outline 4 ED management priorities. (4 marks)

c) List 2 ED contraindications to ACE inhibitor / ARB in hypertension management. (2 marks)

Question 12 | Acute Mesenteric Venous Thrombosis (10 marks)

A 42-year-old man presents to your emergency department with 4 days of progressive diffuse colicky abdominal pain, nausea and vomiting. Past history: factor V Leiden heterozygous, previous lower limb DVT 2 years ago (anticoagulation ceased at 6 months by patient choice), 30 pack-year smoking history. On arrival: Glasgow Coma Score 14, heart rate 115, blood pressure 110/70, respiratory rate 22, temperature 37.6 °C. Examination: diffuse abdominal tenderness with mild peritonism, absent bowel sounds. Bloods: white cell count $18 \times 10^9/L$, lactate 4.2 millimoles per litre, creatinine 110, D-dimer markedly elevated. CT with portal venous phase contrast confirms extensive superior mesenteric vein thrombosis extending into the portal vein with bowel wall thickening and pneumatosis of a short small bowel segment.

a) Name 3 features distinguishing mesenteric venous from arterial ischaemia. (3 marks)

b) Outline 5 management priorities. (5 marks)

c) Name 2 causes of acute portal vein thrombosis. (2 marks)

Question 13 | Femoral Pseudoaneurysm Post-Catheterisation (9 marks)

A 68-year-old man returns to your emergency department 3 days after percutaneous coronary intervention via the right common femoral artery, with progressive right groin pain and a pulsatile swelling at the puncture site. On arrival: Glasgow Coma Score 15, heart rate 88, blood pressure 130/80, afebrile. Examination: tender pulsatile mass 4 centimetres diameter in the right groin with audible 'to-and-fro' bruit on auscultation. The right lower limb pulses are present and the leg is well-perfused. He remains on dual antiplatelet therapy (aspirin and ticagrelor).

a) Define femoral pseudoaneurysm AND name 2 key risk factors. (3 marks)

b) Outline 4 management options. (4 marks)

c) Name 2 other vascular complications of femoral arterial access. (2 marks)

Question 14 | Aortic Endograft Complications and Endoleak (9 marks)

A 72-year-old man presents to your emergency department with a 1-week history of vague abdominal discomfort and a 24-hour history of severe back pain. Past history: endovascular aortic aneurysm repair (EVAR) 6 years ago for a 6.2 centimetre infrarenal abdominal aortic aneurysm; he has missed his routine surveillance CT scans for 2 years. On arrival: Glasgow Coma Score 14, heart rate 105, blood pressure 95/55, respiratory rate 22, afebrile. Examination: tender pulsatile abdominal mass 12 centimetres in diameter, no peritonism. Bedside echocardiography: no pericardial effusion. Urgent CT angiography shows a growing abdominal aortic aneurysm sac of 8 centimetres with a Type 1A endoleak at the proximal anchoring site and a small retroperitoneal haematoma.

a) Define the 5 types of endoleak (Types I-V). (4 marks)

b) Outline 3 management priorities for this patient. (3 marks)

c) Name 2 other late complications of EVAR. (2 marks)

Question 15 | Reperfusion Injury and Lower Limb Compartment Syndrome Post-Revascularisation (10 marks)

A 65-year-old man underwent emergency femoro-popliteal thromboembolectomy 4 hours ago for Rutherford IIb acute limb ischaemia. He is now in your ICU/HDU. The post-operative course has been complicated by progressive calf swelling, increasing pain on passive ankle movement and oliguria. On reassessment: Glasgow Coma Score 14, heart rate 120, blood pressure 110/70, respiratory rate 24, peripheral oxygen saturation 95 percent on 6 litres oxygen, temperature 36.4 °C. Right calf is tense and swollen with severe pain on passive dorsiflexion of toes. Bloods: potassium 6.1, creatinine 280, creatine kinase 42 000 U/L, myoglobin in urine, pH 7.21, lactate 4.5, bicarbonate 14. ECG shows tall peaked T waves.

a) Name 4 features of reperfusion syndrome. (4 marks)

b) Outline 4 management priorities. (4 marks)

c) Name 2 indications for fasciotomy. (2 marks)

Question 16 | Buerger's Disease and Raynaud's Phenomenon (9 marks)

A 32-year-old man presents to your emergency department with painful blackened tips of his right second and third toes. He smokes 30 cigarettes per day and has done so since age 16. There is no history of diabetes, hypercholesterolaemia or family history of vascular disease. On arrival: alert, haemodynamically stable, afebrile. Examination: **distal digital gangrene** of right 2nd and 3rd toes, palpable femoral and popliteal pulses, weak dorsalis pedis, absent posterior tibial pulse, with reduced capillary refill in toes. Ankle-brachial index 0.7. Bloods: inflammatory markers normal, autoimmune screen negative, fasting lipids and HbA1c normal.

a) State the likely diagnosis AND list 3 Shionoya diagnostic criteria. (3 marks)

b) Outline 4 management priorities. (4 marks)

c) Differentiate primary and secondary Raynaud's phenomenon (2 features each). (2 marks)

Question 17 | Takayasu Arteritis (9 marks)

A 25-year-old Asian woman presents to your emergency department with progressive dizziness, syncope on exertion, weakness, and weight loss of 5 kilograms over 3 months. She describes left arm pain on use. On arrival: alert, heart rate 65 sinus rhythm, **blood pressure 145/85 right arm and unrecordable on the left arm**, temperature 37.8 °C. Examination: **weak left radial pulse, audible bruits over carotid and subclavian arteries bilaterally**, abdominal bruit, normal heart sounds. Bloods: ESR 95, CRP 80 (elevated), Hb 102 (normocytic), platelets 480, normal autoimmune screen. CT angiography: long-segment narrowing of the left subclavian, common carotid arteries, and thoracic aorta wall thickening.

a) Name 4 features that confirm Takayasu arteritis. (4 marks)

b) Outline 3 management priorities. (3 marks)

c) Differentiate Takayasu from giant cell arteritis. (2 marks)

Question 18 | Ruptured Thoracic Aortic Aneurysm (10 marks)

A 75-year-old man with known 7.5 centimetre descending thoracic aortic aneurysm on surveillance presents to your emergency department with sudden-onset severe interscapular back pain and dyspnoea. Past history: hypertension, COPD, ex-smoker, previous AAA repair 8 years ago. On arrival: Glasgow Coma Score 13, heart rate 130, blood pressure 70/45, respiratory rate 32, peripheral oxygen saturation 90 percent on 10 litres oxygen, peripheral pulses weak. CXR: widened mediastinum with left-sided pleural effusion and tracheal deviation. CT angiography confirms an 8.5 centimetre saccular ruptured descending thoracic aneurysm with active contrast extravasation into the left haemothorax.

a) Name 3 features supporting the diagnosis. (3 marks)

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

c) List 2 indications for elective TAA repair. (2 marks)

Question 19 | Catastrophic Limb Haemorrhage and Tourniquet Application (9 marks)

A 28-year-old man is brought to your emergency department by ambulance 30 minutes after a high-speed motorcycle crash. He sustained open injuries to the right lower limb with partial amputation at mid-thigh and uncontrolled arterial bleeding at scene. Paramedics applied a Combat Application Tourniquet (CAT) to the right thigh 25 minutes ago which controlled the bleeding. On arrival: Glasgow Coma Score 13, heart rate 130, blood pressure 75/40, respiratory rate 28, peripheral oxygen saturation 96 percent on 10 litres oxygen, cool peripheries, capillary refill 4 seconds, ashen and confused, no obvious head injury. Tourniquet is in place and effective.

a) Outline 3 priorities of catastrophic haemorrhage management. (3 marks)

b) Outline 4 considerations for tourniquet use. (4 marks)

c) List 2 non-tourniquet haemostatic strategies. (2 marks)

Question 20 | Posterior Reversible Encephalopathy Syndrome (PRES) (9 marks)

A 36-year-old woman with end-stage renal disease on haemodialysis presents to your emergency department with severe headache, blurred vision, confusion, and one witnessed tonic-clonic seizure 30 minutes ago. She has missed her last 2 dialysis sessions. Past history: hypertension, lupus nephritis, on tacrolimus and prednisolone for renal transplant 1 year ago. On arrival: Glasgow Coma Score 12, heart rate 95, blood pressure 230/130 millimetres of mercury, respiratory rate 18, temperature 37.0 °C, peripheral oxygen saturation 97 percent on room air. Examination: cortical blindness, normal pupils, no focal weakness, no neck stiffness, papilloedema. CT brain plain shows symmetrical bilateral occipital and posterior parietal hypodensities without haemorrhage.

a) Name 3 features that confirm PRES. (3 marks)

b) Outline 4 management priorities. (4 marks)

c) List 2 differentials. (2 marks)

Question 21 | Acute Severe Aortic Regurgitation (10 marks)

A 45-year-old man presents to your emergency department with sudden-onset severe dyspnoea and chest pain. Past history: known bicuspid aortic valve and aortic root dilatation (4.8 centimetres) under surveillance, Marfan-like habitus. On arrival: Glasgow Coma Score 15 (anxious), heart rate 130 sinus tachycardia, blood pressure 100/40 millimetres of mercury, respiratory rate 32, peripheral oxygen saturation 89 percent on 10 litres oxygen, temperature 36.8 °C. Examination: bibasal crepitations, soft early diastolic murmur at left sternal edge, S3 gallop, collapsing pulse, no peripheral pulse differential between arms. Bedside transthoracic echocardiography: severe aortic regurgitation with rapid LV diastolic pressure equilibration, hyperdynamic LV with normal size, no obvious flail leaflet but possible aortic root dissection on parasternal views.

a) Name 3 features that distinguish acute severe AR from chronic AR. (3 marks)

b) Outline 5 management priorities. (5 marks)

c) Name 2 connective tissue diseases associated with aortic root pathology. (2 marks)

Question 22 | Young Adult with Spontaneous Aortic Dissection — Connective Tissue Disease (9 marks)

A 28-year-old previously well man, 6 foot 6 (198 cm) tall and slim build, is brought to your emergency department with sudden-onset severe chest and back pain that occurred while playing basketball. He has no medical history. On arrival: Glasgow Coma Score 15, heart rate 88 sinus rhythm, blood pressure 150/90 (similar both arms), respiratory rate 22, peripheral oxygen saturation 96 percent on room air, temperature 36.8 °C. Examination: **arachnodactyly, pectus excavatum, scoliosis, high arched palate, positive thumb and wrist (Steinberg, Walker-Murdoch) signs**, soft early diastolic murmur. CT angiography shows Stanford Type A aortic dissection extending from a dilated aortic root (5.0 centimetres). Bedside echocardiography confirms severe aortic regurgitation.

a) Name 4 features supporting Marfan syndrome (Ghent criteria). (4 marks)

b) Outline 3 specific management priorities for young Marfan patient with acute Type A dissection. (3 marks)

c) List 2 other causes of aortic dissection in young patients. (2 marks)
