

Metro North Hospitals ACEM
Fellowship Trial Examination

Short Answer Questions
(SAQ Paper)

Answers only



ACEM Fellowship Trial Examination

2015.2

**Short Answer Questions
(SAQs)**

Answers only

SAQ 1:

Answers:

(6 marks) 4/6

(Any of following options for 1 mark each)

Resolution of underlying issue that caused need for intubation

Spontaneously breathing

Resp parameters: O₂ sats > 95% on FiO₂ < 40%, PEEP < 5, RR < 30, TV > 6mL/kg

Haemodynamic stability without need for inotropic support

Sedation & paralysis worn off

Not a difficult intubation

Obey commands

2-

(5 marks) 3/5

Staff skilled in managing extubation (Nursing & Medical)

Staff available who can reintubate if required

Equipment available for reintubation

Rest of department workload suitable

No more suitable place for this to occur (eg no ICU beds)

3-

(4 marks) 3/4

Suction

O₂ mask & supply

NIV set-up

Intubation drugs & paralysis agents (Suxamethonium 1.5mg/kg drawn up)

Equipment for urgent reintubation

Passmark 10/15 Adjust to ../10 please

SAQ 2:

Answers:

1. Compare the clinical features of neurogenic vs. spinal shock? (6 marks) 3/6

Neurogenic shock	Spinal shock
Paralysis of sympathetic nervous system	Transient cessation of cord activity below the level of injury
Progressive hypotension	Lasts hours- weeks
Initially bradycardia from unopposed vagal stimulation then pseudo or relative tachycardia to oppose brainstem hypoperfusion	Cessation is heralded by the return of Babinski reflexes
Peripheral vasodilation	Loss of somatic and autonomic reflexes below injury level
Cessation of sweating below level of injury	

Cameron pg 84-89

2. He has a GCS 15 and no motor function below C5. Outline your management priorities: (5 marks) 3/5

Manage ventilatory failure - (Control of airway with intubation using MILS as ventilatory failure likely given phrenic nerve involvement at this spinal level)
BP management - high risk of hypotension from neurogenic shock - initially iv fluids +/- pressors - consider concurrent hypovolaemia from bleeding and Ix as required
Maintain spinal immobilisation
Assess and manage concurrent injuries (eg chest, abdo, pelvis, limb fractures)
Temperature control
Methylprednisolone controversial- discuss with local spinal team
Refer to spinal team for definitive management once other injuries excluded

Tinitalli pg 1723-1727

3. The patient is found to have an isolated 3 column injury on CT at the C4/5 level with a burst fracture and suggestion of cord injury. He has no other injuries on extensive and complete imaging.

List 3 options for cervical spine immobilisation in the Emergency Department and their pros and cons: (9 marks) 6/9

1. Soft collar	Pros
	Cons
2. Hard collar	Pros
	Cons
3. Philadelphia collar/Aspen collar	Pros
	Cons

(any combination is acceptable if adequate pros/cons discussed)

Passmark = 12/20 Adjust to ../10 please

SAQ 3:

Answers:

1. Describe the key features on the photo. (2 marks) 1/2

Significant bruising/abrasions to anterior aspect of neck and upper sternum.
Assymetrical swelling/fullness of R side of neck

(No cervical spine immobilization)
(No definitive airway)

2. List 5 major injuries you would be concerned about in this patient. (5 marks) 3/5

Laryngeal fracture/trauma (1 mark)
Cervical spine fracture with neurogenic shock (1 mark)
Any of the following for up to 3 marks:
Carotid artery dissection/haematoma
Thoracic aorta/Great vessel injury
Traumatic brain injury
Pneumothorax/Haemothorax
Intrabdominal injury

3. List 5 indications for intubation in this patient. (5 marks) 3/5

Worsening signs of airway obstruction, eg: from laryngeal oedema or expanding haematoma
Falling GCS and inability to protect airway
Threatened airway with vomiting++ or blood++
To definitively protect airway in light of predicted clinical deterioration
Respiratory failure from C-spine injury
To safely facilitate C-spine imaging/further management

4. List 3 possible difficulties you would anticipate may occur during intubation of this patient and your planned solution to each. (6 marks) 4/6

Anticipated Difficulties	Planned solution
Difficult intubation/Distorted anatomy	Ideally intubate in OT by Anesthetics (fibre-optic, gas induction)
Haemodynamic instability	Preload with fluids +/- pressors Induction drugs – use Ketamine
Possible C spine fracture	Manual in-line stabilization Videolaryngoscope

Passmark 11/18 Adjust to ../10 please

SAQ 4:

Answers:

1. Describe 2 significant findings on this ECG and your interpretation
(3 marks) 2/3

- LBBB
- discordant ST elevation of >5mm in anterior leads (V1-V4).
- (ECG Sgarbossa criteria for STEMI)
- clinical picture and ECG findings are consistent with an anterior STEMI.

2. Outline the criteria used for question 1 (3 marks) 2/3

Sgarbossa criteria:

- Concordant ST elevation > 1mm in leads with a positive QRS complex (score 5)
- Concordant ST depression > 1 mm in V1-V3 (score 3)
- Excessively discordant ST elevation > 5 mm in leads with a negative QRS complex (score 2). This criterium is sensitive, but not specific for ischemia in LBBB. It is however associated with a worse prognosis, when present in LBBB during ischemia.

A total score of ≥ 3 has a specificity of 90% for diagnosing myocardial infarction.

Would also accept alternative 3rd criterion of proportionally excessively discordant ST elevation in V1-V4, as defined by an ST/S ratio of equal to or more than 0.20 and at least 2 mm of STE. (Smith et al)

3. List six management priorities for this patient (6 marks) 4/6

- Goal is reperfusion- ideally via PCI if able to access within 120 minutes otherwise lysis
- Consider NIV if unable to maintain oxygenation via mask (high risk for APO/CCF)
- Judicious fluid bolus (e.g. 250ml) to maintain perfusing BP. May need inotropes if ongoing or progressive hypotension (concerning for cardiogenic shock)
- Anti-platelet therapy- aspirin 300mg + clopidogrel 600mg/ or ticagrelor 180mg loading dose
- Analgesia e.g. fentanyl 25mcg aliquots until pain free (unlikely to tolerate GTN given SBP 90mmHg)
- Anti-coagulation in liaison with cardiology team e.g. heparin 5000 units iv bolus

Passmark: 8/12 Adjust to ../10 please

References:

2013 ACCF/AHA Guideline for the management of STEMI

Life in the Fast Lane

Smith, Stephen W.; Dodd, Kenneth W.; Henry, Timothy D.; Dvorak, David M.; Pearce, Lesly A. (2012). "Diagnosis of ST-Elevation Myocardial Infarction in the Presence of Left Bundle Branch Block With the ST-Elevation to S-Wave Ratio in a Modified Sgarbossa Rule". Annals of Emergency Medicine 60 (6): 766-776.

SAQ 5:

Answers:

1. List 7 likely causes for his jaundice (7 marks) – 4/7

- Physiological (day 2-3)
- Breastmilk jaundice
- Sepsis
- Haemolysis
- TORCH infections
- Biliary atresia
- Hypothyroidism
- G6PD
- Metabolic disease / storage diseases

2. List 6 red flags during history and examination that warrant admission to the hospital. (6 marks) – 5/6

- Prematurity
- Low birth weight or small for gestation
- Previous baby with significant jaundice or kernicterus
- Unwell infant
- Signs of kernicterus
- Parental concerns
- Onset from birth
- Too high (Bili >200 mmol/L) – bilirubin measured above the treatment nomogram
- Conjugated bili >25%

3. List 6 investigations required in ED and justify each one of them. (6 marks) – 4/6

- FBC (and film) – hemolysis – Hb- smear – spherocytosis – reticulocyte count – for hemolysis
- ELFT's – liver function and biliary obstruction
- BC, Urine, LP – sepsis screen
- USS of abdomen if conj bili is high – biliary atresia and duct dilation
- Blood group – rule out incompatibility / may need transfusion
- TFT's – thyroid function tests
- Direct Coombs test – evidence of hemolysis

4. This baby did not require therapy and no serious cause was found for his jaundice.

List 4 Conditions this child needs to meet for safe discharge him home: (4 marks) – 3/4

- Reassuring physical examination, ie well-looking
- Period of observation and feeding
- Bili <200
- Conjugated Bilirubin <25%
- No concerning cause found.
- Adequate follow up arranged – GP or child health nurse / paediatrician

Passmark: 16/23 Adjust to ../10 please

SAQ 6:

Answers:

1. What is the definition of access block? (2 marks) 1/2

Answer:

An admitted patient who remains in the emergency department for > 8 hours because of a delay in accessing an inpatient bed

2. What is the difference between access block and ED overcrowding? (2 marks) 1/2

Answer:

ED overcrowding refers to the situation where ED function is impeded primarily because the number of patients waiting to be seen, undergoing assessment and treatment or waiting departure exceeds either the physical bed and or staffing capacity of the ED. Access block is the principal cause of ED overcrowding.

3. List 4 markers of ED overcrowding. (4 marks) 2/4

Answer:

- Inability to offload ambulance patients and a resultant loss of capacity in the local emergency response in the community
- Inability to place critically unwell patients in an appropriate treatment space when required
- Patients undergoing clinical management in a non-treatment area, where privacy and access to basic clinical resources is reduced or delayed
- Admitted patients receiving a lower standard of care than they would receive in their destination unit
- Obstruction to access and egress routes from the ED in contravention of OH&S requirements

4. List 4 adverse effects of ED overcrowding. (4 marks) 2/4

Answer:

1. Increased adverse events
2. Increased violent behavior
3. Increased errors
4. Delayed time to critical care
5. Increased morbidity
6. Excess deaths

Passmark: 6/12 Adjust to ../10 please

References:

1. www.acem.org.au S57 Statement on overcrowding
2. Cameron 4th Edition, page 89

SAQ 7:

Answers:

1. Describe the key findings on her CXR. (3 marks) 2/3

Bilateral areas of consolidation in RML, RLL & LLL

Multiple clips bilaterally consistent with double lung transplant

CTR within normal limits

(No Pneumothorax or pleural effusions)

(No free gas under diaphragm)

2. List your differential diagnosis for her presentation. (6 marks) 4/6

Infection – Bacterial, viral or fungal (1 mark for each = 3 marks)

Acute Rejection (1 mark)

(1 mark for any of the following, up to max 2 marks)

CCF

PE

ARDS secondary to sepsis/immunosuppression

Bronchiolitis obliterans

3. Outline 5 key steps in your management of this patient in the ED. (5 marks) 3/5

O2 therapy via NRBM to maintain PO2 > 60 (1 mark)

May need respiratory support with NIV or intubation if failing to maintain oxygenation on NRBM alone. (1 mark)

Broad spectrum antibiotics (1 mark) with antifungal & antiviral cover (1 mark)

Eg Piptaz + Fluconazole + Aciclovir (or similar is acceptable)

(1 mark for any of the following up to 2 marks)

Steroids (under guidance of transplant team)

Early referral to transplant specialist team for ongoing management

Caution with IV fluid resuscitation

Check levels of immunosuppressant drugs

Passmark = 9/14 Adjust to ../10 please

SAQ 8:

Answers:

1. List 10 important features of the history in this case. (10 marks) 7/10

Travel details – All countries & specific areas visited
Duration of travel
Details of symptoms
Timing of onset of symptoms related to travel
Preventative actions – prophylaxis, immunisations, water & food precautions
Known exposures – bites, mosquitos, animal contacts
High risk practices – sexual contacts, IVDU, tattoos
Exposure to unwell individuals/outbreaks of disease
Past Medical Hx - immunocompromise
Medications

2. List 5 non-travel related differential diagnoses for this patient's presentation. (5 marks) 4/5

Viral infection
UTI
LRTI
Influenza
Bacteraemia
Meningitis

3. List 5 travel-related differential diagnoses for this patient's presentation & state 1 specific investigation you would perform to exclude the diagnosis. (10 marks) 7/10

Travel-related Infection	Investigation
Malaria	Thick and thin films
Dengue	Dengue serology
Typhoid	Blood or stool culture
HIV seroconversion	HIV serology
Hepatitis	Hepatitis serology
Brucellosis	Brucellosis serology

Passmark: 18/25 Adjust to ../10 please

SAQ 9:

Answers:

1. Describe the main features present. (2 marks) 1/2

Petechiae & Purpura on both legs
Bruising to upper thighs

2. Provide a broad differential diagnosis by completing the table below:

(15 marks) 11/15

Accept 5 of the following 6 categories...

Disease Category	Provide 2 Examples
Autoimmune Connective Tissue Disease / Inflammatory	ITP Autoimmune hemolytic anemia SLE
Hematological	Aplastic crisis / Bone marrow failure vW Disease Hereditary plt syndrome Evans syndrome (anemia+thrombocytopenia)
Malignancy	Leukemia ALL AML CLL Lymphoma Myelodysplasia
Infectious / Post infectious	Viral induced thrombocytopenia EBV CMV HIV varicella rubella related Hep ABC
Immunity related	Immune deficiency syndrome (CVID) HIV Recent immunisation
Drug induced / Toxin	Heparin Antibiotics -cephalosporins Analgesics - ibuprofen / aspirin

3. What is the most likely diagnosis in this patient? (2 marks) 1/2

Immune Thrombocytopenic Purpura

4. What are the main indications to consider urgent treatment for this condition? (2 marks) 1/2

Intracranial Hemorrhage / significant bleeding
Plt < 10

Passmark: 14/21 Adjust to ../10 please

SAQ 10

Answers:

1. List five clinical features used to assess the severity of a patient's upper airway obstruction

(5 marks) 3/5

- Nature of stridor - continuous vs intermittent, soft vs loud
- Self positioning - relaxed vs upright
- Ability to swallow secretions
- Voice change and/or aphonia
- Respiratory distress
- Anxiety/distress

2. Outline your initial treatment of this patient

(5 marks)3/5

- Keep sitting up
- Calm environment
- Nebulised adrenaline 5mg in 5ml
- IV steroids - dexamethasone 8mg or hydrocortisone 200mg
- IV antibiotics - ceftriaxone 2g
- Early ENT involvement
- Difficult airway equipment to the bedside

3) This patient is to be transferred to tertiary ENT care. Outline four important considerations when preparing to transfer this patient and provide some details of each. The department is currently well staffed, with good senior cover.

(12 marks)9/12

- Patient
 - Severity of airway involvement
 - Response to treatment
 - Comorbidities
 - Some discussion of intubate first vs transfer awake. (This pt is deliberately not so severe that he has to be intubated first.)
- Equipment
 - Monitoring - full non-invasive
 - Advanced airway equipment, including difficult airway equipment, especially surgical airway
 - Drugs - more adrenaline nebs
- Escort
 - Senior MO +/- senior RN
 - Skilled and prepared to do surgical airway
- Distance or mode of transport
 - Some discussion of distance required, likelihood of deterioration
 - Road vs air, space available to intervene en route

Passmark: 15/22 Adjust to ../10 please

Ref: Dunn, eTG, Cameron, good common sense!

SAQ 11:

Answers:

1. Describe the rhythm and give your differential diagnosis?

(3 marks)2/3

Narrow complex regular rhythm at a rate of 85

Flutter waves seen in V1 and V2

Likely atrial flutter with 2:1 or 3:1 block

Ddx Sinus rhythm although can't see p waves

2. Describe 3 abnormalities on the ECG and explained how each may lead to syncope.
(6 marks)4/6

- Long QT - $>1/2$ R-R interval – could have caused Torsades
- Evidence of HOCM – ‘dagger-like’ Q waves in aVL and Leftward axis
- Outflow tract obstruction or arrhythmia related to HOCM (this patient actually has HOCM)
- Atrial flutter
Could have caused syncope with 1:1 conduction and rapid ventricular response causing syncope

3. List the components of the San Francisco Syncope Rule and describe its utility.
(6 marks) 4/6

The five criteria used in the SFSR are:

C Congestive Heart Failure

H Haematocrit $<30\%$

E Abnormal ECG

S SOB

S Triage SBP <90

If there is no other cause found for syncope in the ED workup and the patient has none of these 5 criteria, they are at low risk ($<2\%$) of an adverse outcome

Passmark: 10/15 Adjust to ../10 please

SAQ 12:

Answers:

1.

(5 marks) 3/5

PRIORITIES
1. Assemble trauma team, call external members to attend – ie surgeon, radiographer, anaesthetist, orthopaedics
2. Clarify plan and disposition for current patients in resuscitation area
3. Prepare analgesia
4. Prepare equipment for possible interventions – Airway: intubation, Breathing: ICC, Circulation: large bore access, haemorrhage control, FAST scan
5. O Neg blood ready in trauma room, consider TXA

2. (8 marks) 6/8

	CAUSES	INTERVENTION
1	Haemo/pneumothorax	Chest decompression with ICC
2	Intra-abdominal bleeding,	FAST scan If positive – rapid transfer to OT Damage control surgery
3	Pelvic fracture	Pelvic binder +/- CTA Pelvis Interventional radiology
4	External haemorrhage or Long bone fracture	Splinting/traction External compression of bleeding

3. List 3 goals of your fluid resuscitation strategy.

(3 marks) 2

1	Maintain perfusion to vital organs (target SBP 80-100mmHg depending on concern of head injury.)
2	Correct or prevent development of coagulopathy (minimise crystalloid use, targeted blood product use directed by ROTEM or 1:1:1 ratio based approach)
3	Avoid hypothermia (by warming fluids) Avoid acidosis (minimise crystalloid use) (Either is acceptable)

4. Your investigations reveal a pelvic fracture with a disrupted pelvic ring in a vertical shear pattern on pelvic XR . The patient has an unremarkable CXR and a negative FAST scan. The patient remains haemodynamically unstable.

List 1 advantage and 1 disadvantage of operative v angiographic management of the patients pelvic bleeding. (4 marks) 3/4

	Operative Management	Angiographic Management
ADVANTAGES	Rapid availability Can pack pelvis and apply ex-fix rapidly Can operate on other sites ie compound lower limb injuries can be stabilised. Laparotomy if necessary.	Targeted direct bleeding control with good success rate. Less invasive than operative approach. Fewer infective complications.
DISADVANTAGES	Bleeding control may be unsuccessful. May still need angio. Ex-fix makes mobility and nursing care difficult	Takes time to set up and assemble team. Time consuming particularly if have not identified bleeding vessel on CTA prior to angio. Often Angio suite isolated from other resuscitation areas in the hospital. Does not address other injurues.

Passmark: 14/20 Adjust to ../10 please

SAQ 13:

Answers:

1. Give 8 possible causes for his confusion. (8 marks) 6/8

Acute alcohol intoxication
Alcohol withdrawal
Post-ictal state (numerous causes)
Head trauma – SDH/EDH/ICH
Hepatic encephalopathy
Infection – meningitis, encephalitis
Korsakoff's syndrome – from severe vitamin deficiency
Wernicke's encephalopathy
Co-ingestion of other drugs of abuse, eg: opiates
Thrombotic stroke, eg secondary to AF

Some bloods are taken as part of his diagnostic work-up:

2. Describe the Acid-base status above (including calculations), and give 3 relevant differentials for same. (8 marks) 6/8

Metabolic acidosis (Low bicarb)
Cannot comment on respiratory component (not provided)
Anion Gap = $133 - (87 + 10) = 36 = \text{HAGMA}$

Gap:Gap = $\frac{(36-12)}{(24-10)} = 1.7 = \text{Pure HAGMA}$

Osmolar gap = $298 - (1.86 \times 133 + 8.0 + 6.0 + 9) = 28$, therefore raised osmolar gap

Differentials:

Alcoholic keto-acidosis
Starvation keto-acidosis
Consider poisoning with ethanol, ethylene glycol, methanol given high osmolar gap
Renal failure
Lactic acidosis
Salicylate poisoning

Note: No marks for suggesting DKA

3. Describe and interpret the patient's LFT's. (6 marks) 3/6

Raised aminotransferases largely suggest alcoholic hepatitis:
AST:ALT ratio approximately 2

AST 5-10 x normal
Markedly elevated GGT also supports this
ALP also normal which supports this

Largely unconjugated hyperbilirubinaemia ?need to consider haemolysis

Albumin normal suggesting synthetic function in tact
Would need to see Coag profile also

Passmark: 15 /22 Adjust to ../10 please

SAQ 14:

Answers:

1- Describe 3 positive and 3 negative features in the above CXR:

(6 marks) – 4/6

An obvious mass which is symmetrical and extends to the hila bilaterally.

The mass is likely mediastinal

Patient is intubated and the ETT tube is in satisfactory position.

X-ray findings of left lung hypoinflation is suggestive of LMB compression by the mass or poor ventilation from the ett tube.

The relevant increased opacity of the left lung may be due to left upper lobe collapse.

No evidence of other masses or cardiomegaly suggestive of a pericardial effusion.

No obvious sign of pleural effusion though the costophrenic angle on the left is not full visible.

No signs of bony invasion or involvement.

2- List 5 possible causes for the above radiological abnormalities

(5 marks) – 3/5

Lymphoma

TB

Thymic cyst

Thymoma or Thymolipoma

Neuroblastoma

Thyroid mass (rare in children.)

Germ cell neoplasm - eg Teratoma

Sarcoidosis

Vascular defects – Aortic aneurysm

3- Post intubation, his O2 Saturation remains 75% on FiO2 1.0 and the ventilator keeps alarming with high Peak Pressures. You have excluded a problem with the ventilator.

List the measures you would take in the ED to attempt to improve this situation.
(4 marks) – 3/4

Check tube position & suction tube

Bronchodilators

Assess for pneumothorax + decompression if present

Positioning of patient - eg supine to more erect or lateral decubitus (right lung uppermost) in this case with suspected LMB obstruction on xray or fully prone

Advancing the tube beyond the obstruction point

Adequate PEEP to maintain airway patency supported by adequate fluid resus +/- inotropes

Change mode of ventilation - Consider spontaneous ventilation with PS/ PEEP rather than CMV with ongoing paralysis or Volume-controlled mode

Anaesthetics/ ENT assistance- bronchoscopy can help to identify level of obstruction and emergent mx (eg intubation of both main stem bronchi beyond the airway obstruction with more specialised tubes like microlaryngeal tubes.)

Passmark: 10/15 Adjust to ../10 please

SAQ 15:

Answers:

1. Describe 3 important features in this clinical photograph & state the significance.

(3 marks)2/3

- 3 stab wounds to back
- active bleeding
- Proximate to heart – high risk of cardiac injury, likely PTx

2. List 2 ultrasonographic signs that would be consistent with pericardial tamponade?

(2 Marks) 1/2

- Pericardial effusion
- R sided heart collapse during diastole

3. List 2 indications for emergency department thoracotomy for penetrating trauma.

(2 marks)1/2

- Cardiac arrest at any point with initial signs of life in the field
- Systolic blood pressure below 50 mm Hg after fluid resuscitation
- Severe shock with clinical signs of cardiac tamponade

4. List 3 potential complications from resuscitative thoracotomy?

(3 marks)2/3

- a. Coronary artery injury/ligation
- b. Phrenic Nerve laceration
- c. Diaphragmatic injury
- d. Chest wall vascular injury (intercostals, internal mammary)
- e. Infection
- f. Health care worker body fluid exposure

Passmark = 6/10 Adjust to ../10 please

References:

Robert's and Hedges

Rosen's

SAQ 16: Answers:

Q1. (2 marks) 1/2

Right peri-sylvian and insular cortex hypodensity consistent with an infarct. (MCA territory)

Basal Ganglia spared

Q2. (2 marks) 1/2

R MCA Thrombo-embolic Infarct

- distal main stem with superior and inferior divisions affected.

Q3. (4 marks) 3/4

Contralateral hemiparesis face & arm > leg

Contralateral hemisensory loss

Contralateral visual field defect (homonymous hemianopia/quadrantanopia)

Dominant lesion – aphasia (expressive and receptive)

Q4. (10 marks) 6/10

Title - Thrombolysis for acute CVA

Target audience -ED Triage and staff / Internal Medicine /ICU / Radiology

Immediate actions for patients with suspected stroke

Inform ED senior / Focused history and examination /Proceed to urgent CT Brain

/Order routine lab tests, ECG, CXR

Instructions / Checklist paperwork for nursing staff and medical team to document process – BP observation important

Detailed Examination including - NIHSS score - Disability assessment – Modified Rankin score

Inclusion criteria - Clinically suspected CVA - Less than 4.5 hours - Age >18

Exclusion criteria

ICH / recent stroke / MI / Trauma /GI bleeding

Pt improving dramatically / Very large CVA on CT or clinically very severe symptoms

Abnormal INR or platelets

Assess Bleeding risk

Discussion with Neurology / ICU / Stroke Team

Consent process - with patient / family – risks of bleeding

Drug specific information tPA (0.9mg/kg, 10% bolus dose, then infusion)– dose / route of

Disposition – ICU / stroke team.

References – stroke guidelines, Australian Stroke Foundation

Addenda – NIHSS score

Signatories – ED director / Stroke team / ICU

Review date

Passmark: 11/18 Adjust to ../10 please

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SAQ 17:

Answers:

1. List six factors of history used to assess his risk of suicide:

(6 marks) 4/6

Anything from this list:

- Active psychiatric illness - major depression, severe anxiety, active psychosis
- Loss - relationship, family, work, health (ie serious illness)
- Support network or absence thereof, social isolation
- Demographics - age, sex, cultural background
- Plans - lethality & violence of ideas, access to lethal means, degree of planning, suicide note
- Previous attempts
- Intoxication and substance abuse
- Hope - hopelessness vs plans for the future
- Insight and judgement, degree of impulsivity

Also SADPERSONS score:

- **S**: Male sex
- **A**: Age
- **D**: Depression
- **P**: Previous attempt
- **E**: Excess alcohol or substance use
- **R**: Rational thinking loss
- **S**: Social supports lacking
- **O**: Organized plan
- **N**: No spouse
- **S**: Sickness

2. List four features most useful in differentiating an organic cause from a psychiatric cause of his presentation

(4 marks) 2/4

Suggestions:

- Abnormal vital signs, including fever
- Age of first onset
- Drug and alcohol use
- Features of delirium - fluctuating symptoms, disorientation, visual hallucinations, decreased level of consciousness
- Neurological features
- Identifiable intercurrent medical illness
- (Aim is for candidates to say what they feel are *most* useful. Experienced candidates should be able to define this easily. Examiners should allow discretion, but use their own experience to decide if answers are reasonable.)

3. What pharmacological options do you have to calm him down? For each option, list the dose and route of administration.

(6 marks) 4/6

Suggestions:

- Oral preferred as least restrictive or invasive method for management
 - Oral diazepam - well tolerated, easy to dose & administer, doesn't mask symptoms
 - Oral olanzapine - easy to administer, well tolerated
- IM agents more invasive, probably only used if requires detention, or patient prefers
 - Droperidol 10mg - predictable, well tolerated
 - Consider midazolam or haloperidol, but candidate needs to have good reasons for using these agents and this route in this situation

4. List three factors which influence your decision on whether he can leave.

(3 marks) 2/3

Suggestions:

- Suicide/self harm risk stratification (as above)
- Capacity
- Current or prior MHA orders in effect
- Mental State Examination
- Support person to ensure safety
- Follow-up in place

Passmark: 12/19 Adjust to ../10 please

SAQ 18:

Answers:

1- List 6 differentials for her presentation.

(6 Marks) 4/6

Sepsis

Congenital heart disease

Trauma/NAI

Hypovolaemia

Electrolyte imbalance

Endocrine - CAH

In born Error of Metabolism

Seizures

2- List your treatment priorities in sequential order.

(4 marks) 3/4

Airway/breathing – airway manoeuvres and oxygen – improve saturations, if persistent hypoxia will likely require RSI

Treat shock – IV access, IO if unable and IV fluid – 10-20ml/kg bolus (smaller bolus in case of CHD), reassess and repeat

Seek/treat hypoglycaemia 2ml/kg 10% dextrose

Source control – Assume sepsis and empirically treatment with antibiotics – cefotaxime 100mg/kg and amoxicillin 50mg/kg

If CHD strongly suspected – prostaglandin

3- You decide to intubate this baby.

What 2 sizes of ETT will you prepare?

List your drug selection with dosage:

(4 marks) – 3/4

3 + 3.5mm

Suxamethonium – 1-2mg/kg

Ketamine – 1-2 mg /kg

Avoid midazolam /thio /propofol

Fentanyl – 2-3 mcg/kg

Passmark: 10/14 Adjust to ../10 please

SAQ 19:

Answers:

1. Describe the relevant findings in the x-rays above. (4 marks) 3/4

Posterior dislocation of gleno-humeral joint seen on lateral view.
Internal rotation of humeral head (light-bulb sign) on AP view
Widening of glenohumeral space = "rim sign"
No obvious bony fracture

2. Describe your management of this patient's condition. (8 marks) 6/8

Analgesia for patient depending on pain scale and titrated to effect
Neurovascular assessment of limb (1 mark)
Graded approach to procedural sedation to help with reduction – choices include Nitrous oxide, Ketamine or Propofol (with appropriate doses)
(Delay to relocation suggests likely need for deeper sedation/muscle relaxation)
Reduce dislocation – traction on limb, 90° of abduction, then external rotation
OR Depalma method
Repeat neurovascular exam post-relocation
Post reduction x-rays
Splint with broad-arm sling
Arrange orthopedic follow-up

3. The patient is unhappy that his injury was not dealt with adequately when he presented overnight.

How will you address this situation? (8 marks) 5/8

Acknowledge patient's concerns and apologise for missed diagnosis.
Reassure patient that this will be addressed through your hospital's safety and quality system
Careful documentation of all of above
Discuss with RMO at an appropriate time (not directly after night shift)
Gather information about the situation – Complexity and busyness of shift, degree of supervision, degree of understanding of the condition and its radiographical findings, radiology reporting systems
Feed case to departmental quality and safety processes and hospital quality and safety board
Education for RMO and staff
Feedback to patient regarding progress of above
May need to seek medicolegal advice if patient is pursuing this

Passmark: 14/20 Adjust to ../10 please

SAQ 20:

Answers:

1. List 8 possible causes for her anaemia. (8 marks) 6/8

Iron deficiency anaemia from blood loss (likely menstrual or GIT)

Iron deficiency anaemia from poor dietary intake

Megaloblastic anaemia from folate/B12 deficiency

Haemolysis

Anaemia of chronic disease

Bone marrow malignancy or infiltration

Haemoglobinopathy

2. What would be the indications for a blood transfusion in this patient?

(3 marks) 2/3

Hb < 70 g/L

Symptomatic anaemia (eg SOB, Syncope, Heart failure)

Significant comorbidity (eg cardiac disease, malignancy)

3. List 4 early and 4 late complications of blood transfusion.

(8 marks) 6/8

Any of the following for up to 4 marks:

Any of the following for up to 4 marks:

Early Complications	Late Complications
Acute haemolytic reaction	Blood borne infections (HBV, HIV, HCV, vCJD, HTLV)
Acute febrile non-haemolytic reaction	Alloimmunisation
Allergic reactions/Anaphylaxis	Post-transfusion purpura/Thrombocytopenia
Bacterial infection/Sepsis	Iron overload
Transfusion-related acute lung injury (TRALI)	Delayed haemolytic transfusion reaction
Transfusion associated circulatory overload (TACO)	Transfusion-associated graft vs host disease

Reference: www.transfusion.com.au

4. After a consent discussion with the patient she refuses a blood transfusion as she is concerned about the risks.

List 2 alternative options you could consider in this patient.

(2 marks) 1/2

Iron oral supplements

Iron infusion

Conservative Mx with consideration of EPO if no improvement in the next few weeks.

Passmark: 15/21 Adjust to ../10 please

SAQ 21:

Answers:

Q1. (2 marks) 1/2
Atrial Flutter with variable 2:1 / 3:1 block. No ischemic features.

Q2. (8 marks) 5/8

Factors favoring rate control	Factors favoring rhythm control
Age >65	Young patients
Asymptomatic	Severe symptoms
Longstanding AF / Persistent	Short duration of symptoms Or Heart failure due to AF
Left atrial enlargement	Mild or moderate left atrial enlargement only

Q3. (6 marks) 4/6

HAS BLEED score – 4 = 4% chance bleed in 100 pt years

HTN

Abnormal renal or liver function

Stroke history

Bleeding history

Labile INR

Elderly >65

Drug use – aspirin, NSAID, steroid

Passmark: 10/16 Adjust to ../10 please

SAQ 22:

Answers:

1. Describe the key abnormalities on the X-ray & state the significance.
(4 marks) 3/4

Minimally displaced supracondylar fracture – anterior cortex disruption
Anterior and posterior fat pad signs
Risk of neurovascular compromise and compartment syndrome
Needs Orthopaedic referral

2. Name a classification system that is used in this fracture type.
Give details of each category and the implications for your management of his fracture in the ED.

(7 marks) 4/7

(1 mark for Gartland Classification system)

(1 mark for description & 1 mark for Mx for each type up to 6 marks)

Gartland Classification

Type 1 – Undisplaced fracture

No posterior displacement of capitellum from ant humeral line

No reduction required, managed as outpatient in long arm backslab

Type 2a – Anterior humeral line is anterior to the middle of capitellum

Need reduction in ED & immobilization at 90 degrees of flexion

May go home if no neurovascular compromise or concern for compartment syndrome

(Type 2b – Needs manipulation under II in OT by Orthopaedics & plaster)

Type 3 – Significant posterior displacement of capitellum with no cortical contact

Need referral for urgent ORIF

3. What discharge advice would you give the parents if this child is sent home from the ED?

(5 marks) 4/5

Plaster care advice

Follow-up arrangements

Analgesic options (Paracetamol & Ibuprofen)

Elevate limb as much as possible in first 24 hours

Indications for return to ED – significant pain, swelling, colour change to fingers, pins & needles in fingers which don't resolve by elevating limb, backslab is damaged, loose or tight fitting

Passmark – 11/16 Adjust to ../10 please

Other options for future questions:

Analgesic options

Complications of this injury

SAQ 23:

Answers:

1. List 5 key differential diagnoses for this patient (5 marks)3/5

- Pre-eclampsia
- Hypertension in pregnancy
- Migraine
- SAH
- CVA
- Meningo-encephalitis
- Tension headache

2. List and justify the key elements of your early ED assessment of this patient. (14 marks) 10/14

Examination	Justification
Reflexes	Presence of clonus
Neurological exam	Focal deficit
Investigation	Justification
FBC	Low platelets (HELLP), haemolysis
ELFTs	HELLP, elevated creatinine
WTU	Proteinuria
Uric acid	Elevated in pre-eclampsia
CT brain	If features of SAH or focal deficit
CTG monitoring	Foetal well-being

Shortly after you begin seeing her, she has a generalised tonic-clonic seizure.

3. List and justify your immediate emergency department management priorities (excluding investigations) for this patient. Include doses where appropriate (10 marks)8/10

(accept 5 of the following 6...)

Management	Justification
Airway control	Prevention of hypoxia, prevent aspiration
Magnesium sulphate 4-6g over 20min, 1g/h infusion	Seizure termination
Midazolam 2.5mg boluses	Seizure termination
Hydralazine 5-10mg IV	BP control
Early O+G input	Facilitate emergent delivery
Assessment of foetal well-being	Ensure ongoing viability, detect fetal distress

Passmark: 21/29 Adjust to ../10 please

SAQ 24:

Answers:

1. Describe the key abnormalities and interpret these results.

(5 marks) 3/5

Hepatic failure with non-obstructive pattern

Hypoglycaemia – may be cause of low GCS

Impaired synthetic function of liver with low albumin and high INR.

This may represent fulminant hepatic failure in the setting of a confused & drowsy patient with likely hepatic encephalopathy.

2. List 6 possible underlying aetiologies for these abnormalities.

(6 marks) 4/6

Acute viral hepatitis

Toxins (esp Paracetamol, Mushrooms)

Idiosyncratic drug reaction

Chronic liver failure secondary to alcohol abuse

Autoimmune liver disease

Ischaemic liver injury

Malignancy

Budd Chairi Syndrome (Hepatic vein thrombosis)

Wilson's disease

Idiopathic

3. List and justify 8 additional investigations would you perform in the ED to assist in your management of this patient.

(16 marks) 12/16

VBG – assess for acidosis

Xmatch – risk of bleeding if coagulopathic & may need FFP

U&E – correct electrolyte abnormalities & assess for renal failure

FBC – look for anaemia & thrombocytopenia

Ammonia level – look for hepatic encephalopathy

Paracetamol level – consider need for NAC

Drug screen – assess possible ingestions/overdoses

Hepatitis serology – look for aetiological cause for liver failure

Autoimmune markers – look for aetiological cause for liver failure

CXR – look for complications such as pleural effusions.

CT Abdo – assess cause of liver failure such as hepatic vein thrombosis, malignancy, ischaemia, cirrhosis.

CT Brain – look for signs of cerebral oedema

Passmark: 19/27 Adjust to ../10 please

SAQ 25:

Answers:

1. Describe the pertinent findings on this X-ray & give them most likely diagnosis.
(3 marks) 2/3

Extensive gas in soft tissues of dorsum & plantar aspects of foot

No obvious fractures (NOT a compound fracture)
= Necrotising fasciitis

2. What are the likely organisms causing this condition?
(3 marks) 2/3

Group A Strep

Clostridium perfringens
Staph aureus
Vibrio (Salt-water)

3. List 5 groups of patients that may be predisposed to developing this condition.
(5 marks) 3/5

Diabetics
Alcoholics
Immunocompromised
Malignancy
HIV infected patients
Transplant patients
Post-op patients
Chronic liver disease

4. List 3 factors that would give the patient a poorer prognosis
(3 marks) 2/3

Advanced age

Significant comorbidities
Underlying circulatory compromise of limb
Late presentation
Delay to surgical debridement

Passmark: 9/14 Adjust to ../10 please

SAQ 26:

Answers:

1.

(Marks 3) 2/3

Hemorrhage in the anterior chamber inferiorly
Iridodialysis (iris separation from ciliary body) inferiorly
Pupillary distortion – damage to sphincter ?traumatic mydriasis

2.

(marks 12) 8/12

- **Vitreous haemorrhage**

floaters and cobwebbing (minor haemorrhage)
visual haze or visual loss in more extensive haemorrhages
red reflex absent
Weiss ring on fundoscopy /retina obscured

- **Retinal detachment**

VA markedly decreased
Absent red reflex
Visual field loss
Fundoscopy indeterminate / elevated retina

- **Ocular globe rupture**

Vitreous humor leak
dark uveal tissue exposed at limbus
distorted pupil
decreased visual acuity
subconjunctival haemorrhage with swelling or chemosis
decreased intraocular pressure

- **Lens subluxation and dislocation**

blurred vision
quivering of the iris when the patient moves their eye

- **Retrobulbar haematoma**

proptosis
ischaemia of the optic nerve - fixed and dilated pupil
nerve palsy / muscle entrapment – ophthalmoplegia

- **Acute Glaucoma**

severe unilateral pain / nausea and vomiting
visual loss / halo
semi dilated non reactive pupil
corneal haze
markedly increased intraocular pressure (> 30 mmHg)

3-

(Marks 5) 3/5

Bedrest at 30 Degrees
Analgesia – avoid NSAID's – opioids if needed
Eye shield
Cycloplegics

Discuss with ophthalmology – features suggest an additional injury – needs urgent review

Consider uss to exclude retinal detachment / globe rupture

Passmarks 13/20 Adjust to ../10 please

SAQ 27:

Answers:

1- List 8 steps in your approach to managing this issue. (8 marks) 5/8

Assign a Senior doctor to attend SSU and coordinate review these patients urgently.

Arrange to **move any unstable patients to a higher area of care** (eg Resus)

Coordinate handover for rest of the department.

Proceed to SSU after handover to review SSU patients with Night Registrar & discuss management.

Arrange to **debrief with Night Registrar** about the shift and any difficulties at another time.

Identify any critical errors that have occurred and ensure key learning has been addressed in these cases with treating doctor.

Notify your ED director of the situation.

Refer any cases where patient safety was compromised for review through departmental M&M process.

Review any current SSU guidelines.

2- In light of this incident, your director asks you to develop a set of exclusion criteria for the Short stay unit. List your criteria. (8 marks) 6/8

Unstable haemodynamic status

Need for ongoing cardiac monitoring

GCS < 14

LOS likely to exceed 24 hours

Patients requiring intensive 1:1 nursing

Care better managed by inpatient unit (eg complex medical or surgical patients)

Patients without clear diagnosis or treatment plan

Patients posing risk to staff (eg psychotic, violent, forensic history)

Elderly patients who are unable to mobilise

Passmark: (11/16) Adjust to ../10 please

SAQ 28:

Answers

1. Based on the above information, which patient would you request be extricated first and why?

(3 marks) 2/3

Patient 1

- Haemodynamically compromised and most likely to be time critical.
- Needs immediately airway Mx due to cyanosis.

2. Based on the above information, list 4 injuries that you are concerned that Patient 2 may have sustained, stating the reason for your concern.

(4 marks) 3/4

Lower limb fractures, possibly compound – as trapped by legs
Head injury – GCS 14 & agitated
Chest injuries/PTx/Haemothorax/Flail chest – elevated RR, significant mechanism
Intra-abdominal injuries – significant mechanism, seatbelt injuries
Pelvic injuries – significant mechanism, trapped by legs
Spinal injuries – significant mechanism

3. Based on the above information, list 6 potential injuries that Patient 1 may have sustained. For each, state how the injury would need to be specifically addressed before helicopter transportation to the trauma centre.

(12 marks) 9/12

Potential Injuries	Management of Injury prior to transport
Head Injury with altered LOC	Intubation with C spine protection Neuroprotective measures to prevent secondary injury
Haemo/Pneumothorax/Tension PTX	Mini-thoracostomy or chest drain (Needs to be definitive prior to loading NOT a cannula in IC space)
Flail chest with respiratory compromise/Lung contusions	Intubation, ensure adequate oxygenation with FiO ₂ to maintain O ₂ sats >94%
Intra-abdominal organ injury	Secure large bore IV access, IV fluid boluses to endpoints of SBP >100 in setting of head injury. Blood if available

	pre-hospital, tranexamic acid
Pelvic fracture +/- associated vascular injury	Secure large bore IV access, Pelvic binder, tranexamic acid, IV fluids to endpoints of SBP > 100 in setting of head injury
Long bone fractures, possibly compound	Splinting in anatomical position, Secure large bore IV access, IV fluids to endpoints of SBP > 100 in setting of head injury, tranexamic acid
Spinal fractures	Spinal immobilisation with C spine collar and spinal board for transfers

Passmark: 14/19 Adjust to ../10 please

SAQ 29:

Answers:

1. List 8 key features in the history that you would need to assess this patient's risk of decompression illness. (8 marks) 6/8

Number of dives & ascents

Depth of dive

Time spent at bottom

Decompression or safety stops performed

Which gases used in SCUBA apparatus

Timing of collapse in relation to resurfacing (AGE vs DCI)

Past medical history (esp cardiac, seizures)

Medications

Pattern of symptoms (barotrauma vs AGE vs Decompression illness)

2. List 5 body systems that may be affected by decompression illness and give one example for each. (10 marks) 7/10

Neurological (confusion, memory loss, headache, visual disturbance, ALOC)

Cardiac/Respiratory (chest pain, APO, hypoxia)

Musculoskeletal (myalgia, arthralgias)

Vestibular (vertigo, tinnitus, hearing loss, ataxia)

Skin (rash)

3. Outline 4 key considerations in transporting this patient by helicopter. (4 Marks) 2/4

Maintain horizontal position if concern re AGE

Needs high flow O₂

Patient needs to be flown at sea level altitude.

Delay to recompression leads to poorer outcomes, hence need for urgent transport.

Transport to nearest centre with decompression chamber.

Passmark: 15/22 Adjust to ../10 please

SAQ 30:

Answers:

1-List 4 differential diagnoses for this presentation. For each diagnosis, list two key features (either historical or on examination) that may help distinguish that diagnosis.
(12 marks) 9/12

Answer:

Diagnosis	Features
Testicular torsion (Pass/fail)	History: sudden onset Exam: Transverse lie, loss of cremasteric reflex
Epididymo-orchitis	History: Known STD, dysuria, discharge Exam: Warm hemiscrotum, temp
Torted appendix testis	History: may have local trauma Exam: Blue dot sign
Direct inguinal hernia	History: Known hernia, post valsalva Exam: Cough impulse, bowel sounds on auscultation

2- You phone the surgical registrar on call to request that he review the patient urgently in ED. The surgical registrar states he will not come to review the patient until you have the results of an ultrasound of the testes.

Briefly describe your approach to this situation. (5 marks) 3/5

This is a time critical clinical event.

USS assessment is secondary to clinical assessment by a surgeon for suspected torsion of testis and need for urgent de-torsion in theatre +/- orchidopexy.

USS is reserved for cases where the surgeon does not feel urgent OT is required or an alternate diagnosis is more likely.

Urgent escalation to the Surgical Consultant to arrange clinical review of the patient prior to any further investigations.

Feedback to the surgical team at a later stage with respect to the inappropriate refusal of the surgical registrar to review the patient in a timely fashion.

Review of existing guidelines for acute testicular pain in the ED.

Passmark = 12/17 Adjust to ../10 please