

**WRITTEN EXAMINATION
SHORT ANSWER QUESTIONS (SAQ)**

**NSW Fellowship Course
Trial Exam 2018:2**

ANSWER GUIDE

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Question 1

TOPIC - Trauma – Blunt Trauma M.B. Quad Bike Accident on Rural Property = massive transfusion protocol activation – management of patient in haemorrhagic

Authors - Rob Edwards and Geoff Mifsud / Marker - Rob Edwards

Feedback - relatively poor discriminator - part 2 and 3 could be improved in terms of wording

i) Initial actions

- a. Prepare necessary equipment eg. Ultrasound, airway trolley, chest drains **(1 mark)**
- b. Ensure available Resus bed. **(1 mark)**
- c. Ensure rest of department is being managed etc. **(1 mark)**
- d. Activate and assemble trauma team **(1 mark)**
- e. Notify theatres and/or radiology **(1 mark)**
- f. Activate **Major Transfusion Protocol (notify blood bank) MUST MENTION**
 - i. >>>.request blood products **(1 mark)**

ii) Surgical priorities/ Mx priorities

- g. Stop bleeding from scalp wound e.g., staple or repair **(1 mark)**
- h. Pelvis bleeding >>binder **(1 mark)**
- i. Splint long bone fractures **(1 mark)**
- j. Tranexamic acid 1 gm if within 3 hours of trauma. **(1 mark)**
- k. Definitive to stop pelvis bleeding Measures to stop pelvic bleeding >>> OT to pack pelvis via extra peritoneal approach, if this fails, angiographic embolization **(2 marks)**
- l. Correct and prevent hypothermia. Actively rewarm the patient and warm blood products **(1 mark)**

iii) Balanced Blood products are the ideal resuscitation fluids (MTP), theatre is correct disposition:

- m. Expedite transfer to **surgery** for definitive treatment of bleeding
- n. Will score for stating “not for CT as unstable” in the disposition column
- o. Apply principles of **permissive hypotension** (although limited evidence in blunt trauma)
- p. **Minimise use of crystalloid**
- q. use balanced blood products and **TXA** (see below)
- r. maintain **temperature, prevent acidosis and traumatic coagulopathy**
- s. Specific Products:
 - PRBC, Fresh frozen plasma, Platelets
 - Ratio important PRBC:plasma:platelets = 1 to 1.4:1:1
 - Cryoprecipitate (fibrinogen / factor VIII): correct low fibrinogen

Question 2

TOPIC - Post Cardiac Arrest 'Management' – a question on Targets from Evidence base including Blood Pressure, Oxygen, Cath Lab etc. AND/OR Packaging patient for transfer – priorities AND / OR Compare and Contrast the Management of Cardiac Arrest in patient 3 days post CABG and 3 months post CABG OR Post CABG v LVAD – in terms of CPR, Shocks intubation etc

Authors - Liaquat Sheriff, Shalini Arunanthy and Hua Chang

Marker - Shalini Arunanthy. High marks were scored for this question. Important to be highly specific with aspects of post arrest management

This question tests basic and specific knowledge of cardiac arrest post CABG:

- a. List 4 likely causes for his symptoms (4 Marks)
- **Pericardial tamponade (must say for one one mark)**
 - Graft occlusion
 - Tension PTx
 - Massive HTx
 - Severe Anaemia
 - - GIT bleed if anticoagulated
 - AMI
 - CCF /Cardiogenic shock
 - PE
 - Pleural Effusion/haemothorax
 - Don't accept non specific answers as wording is 'MOST likely'

(Should have bold to score full marks)

- b. List/justify 2 other tests required urgently (2 marks)
- ECG
 - ECHO / BEDSIDE POCUS
 - G&H
 - ABG should be accepted (not assumed to be routine)
 - TEG/ROTEM
 - NO MARKS FOR CXR AS THIS HAS BEEN DONE

(Need 2 distinct answers to score the 2 marks e.g. not two marks for USS)

c. Stepwise approach in the management of his cardiac arrest (5 marks)

- Mobilisation of “Staff space and stuff” required for ALS Mx
- Modified ALS management
- Team factors
 - Start CPR (with caveats outlined below)
 - lead and assign roles
- **Defibrillation 200j biphasic ASAP x 3** (witnessed, monitored)
 - **Consider 3 stacked shocks if the pads are on**
- **Start CPR if not output regained after shocks**
- Adrenaline 1mg after every 2nd cycle/ Amiodarone 300mg after 3rd shock
- **Cardiothoracics**
 - Call for help to potentially Open chest sternotomy/Pericardiocentesis
 - OR Consider - Arrange or Perform Early Re Sternotomy within 5 minutes of arrest ***
- Adrenaline preferably in lower doses (100 mcg IV as per protocol) - use adrenaline very cautiously and titrate to effect (IV doses of up to 100mcg in adults) this is based on having invasive arterial monitoring in ICU

(Source Dunning et al:

<https://lifeinthefastlane.com/ccr/cardiac-arrest-management-after-cardiac-surgery/>)

(Have to have bold to score full marks. Maximum 3/5 if none given)

d. Post arrest Management - table on 3 priorities matched with targets or endpoints (6 marks) - must be paired appropriately

Management Priorities	Target
Airway Management	Intubation - Protect airway
Ventilation	Maintain oxygenation/CO2 (Sats >94) (CO2 35-45) Avoid Hyperoxia
BP Mx - titrate inotropes	MAP >70+, SBP >100 (MUST SAY higher targets post arrest for mark)
Targeted Temp management– prevent hyperthermia with environmental control/cold fluids	Normothermia- Temp 36C (Nielsen Study)
Insulin +/- Dextrose	BSL 5-10
FASTHUG	ICU management
Other Reasonable Answer	-----

(Need 2/4 bold to score full marks. If no bold 2/6 max, if 1 bold 4/6 max.)

QUESTION 3

TOPIC - Thyroid Questions - Post Surgical op

Author - Liaquat Sheriff

Marker - Shima: Shima Ghedia

- *Not a difficult question – candidates did well*
- *BE SPECIFIC – e.g. don't just write "arrhythmia" write 'prolonged QT'*
- *Stridor is most likely to be due to extrinsic compression rather than laryngospasm*
- *Rural setting = need retrieval team*

(i)

- Haemorrhage/haematoma
- Bilateral or unilateral Rec laryngeal nerve injury
- And any two of the following
 - - Tracheomalacia,
 - Hypocalcaemia,
 - Wound infection/ cellulitis
 - PE
 - Pneumonia

(ii) Hypocalcaemia

- Circumoral **paraesthesias**
- mental status changes
- **tetany**
- carpopedal spasm
- Laryngospasm
- Seizures
- QT prolonged on ECG - cardiac arrest/torsades

NOTES - Hypoparathyroidism can result from direct trauma to the parathyroid glands, devascularization of the glands, or removal of the glands during surgery. Postoperative hypoparathyroidism, and the resulting hypocalcemia, may be permanent or transient. Hypocalcemia after thyroidectomy is initially asymptomatic in most cases. Evaluation of parathyroid is performed in either of the following ways:

- Follow ionized calcium (or total calcium and albumin) levels perioperatively
- Measure PTH postoperatively; a normal level predicts normocalcemia

Treatment is as follows:

- Asymptomatic hypocalcemia in the early postoperative period should not be treated with supplemental calcium

- In symptomatic patients, replace calcium with IV calcium gluconate
- Typically, patients who begin to have symptoms can be started on oral calcium and vitamin D
- In 1-2 months, an attempt to wean the patient off oral calcium may be made
- Dependence on calcium supplementation for longer than 6 months usually indicates permanent hypoparathyroidism

(iii)

Management

1. Resus bed
2. O2
3. **WHILE YOU MAY GIVE ADRENALINE FOR (Undifferentiated) STRIDOR NORMALLY IT IS NOT SPECIFIC FOR THIS QUESTION...**
4. Monitoring
5. Bloods (FBC, Coags, Calcium)
6. IVC
7. Pull dressing down and Assess for bleeding/haematoma
8. **Contact ENT/Surgical team - make reference to being in a rural setting**
9. Anaesthesia team ASAP
10. will need urgent ?OT/ Nasendoscopy
11. **NOT FOR RSI AND MUST REFER TO AIRWAY MANAGEMENT FOR ONE MARK - IDEALLY AN ALTERNATIVE STRATEGY** - e.g. need to justify reasonable plan
12. Open surgical wound to decompress the haematoma

Must say at least one of bold / or loss of one mark

Question 4

TOPIC - Adult Medical Presentation – bloods pop with severely deranged LFT – sepsis AND obstructive jaundice – interpret LFT and management - up to 14 marks

Author - Rachel Boddy and Andrew Coggins

Marker - Rachel Boddy

Feedback from the Marker:

- *Overly generic answers were given, such as 'deranged LFT'*
- *Need to also be specific with management answers*
- *Candidates should state the time critical treatments before the generic answers such as an antiemetic with dose*

Refer to Prop 4 – Blood results (EUC & LFT results)

a) List 3 significant abnormalities on his blood results. (3 marks)

1. obstructive jaundice
2. AKI / pre –renal failure
3. metabolic acidosis

Also accepted hypoalbuminemia, synthetic liver dysfunction (or similar)

b) List 3 potential differential diagnoses for his presentation. (3 marks)

1. ascending cholangitis
2. gallstone obstructing CBD / choledocholithiasis
3. biliary tree stricture or tumour –extrinsic / intrinsic
hepatic malignancy/metastases with obstruction/infection
(less likely pancreatic head ca – typically painless jaundice – unless complication like cholangitis –but will accept)

c) List and justify 3 investigations you would perform in this patient. (3 marks)

Investigation	Justification
1. Lactate	Sepsis severity / prognostic / guide Rx
2. U/S - hepatobiliary	Confirm CBD obstruction & identify cause – allows early ERCP planning
3. Blood cultures	Typically GNR sepsis – but allows targeted abi therapy

NB – Bold is mandatory for full marks (will accept ED POCUS if states looking for CBD obstn / dilated CBD)

Will also accept the following with reasonable justification:

Bedside

ABG – re evidence of MSOF

Lab

FBC

COAGs

PCT / CRP

LDH

“Septic screen”

Imaging

POCUS

d) List 4 treatment priorities for this patient.

For each treatment priority state your preferred intervention or the specific drug/s (including dose) you would use. (4 marks)

Treatment Priority	Intervention or specific drug/s (dose)
1. Rx sepsis (Ascending cholangitis)	IV ampicillin 2g qid and gentamicin 5-7mg/kg (max 640mg) daily IV (or TGI appropriate alternatives eg Ceftriaxone 1g IV daily)
2. Rx of CBD obstruction	Warrants urgent ERCP –stone removal /sphincterotomy +/- stent
3. Rx pain / analgesia	Titrate Fentanyl IV 50mcg every 5 mins and reassess response (preferred agent in view of AKI and CVS stability)

4. Rx Hypotension	IVF crystalloid – Plasmalyte or Hartmann's 20ml/kg bolus and then reassess and repeat if needed. If non responsive and adequately fluid resuscitated add pressor eg noradrenaline or metaraminol
5. Rx AKI	Avoid nephrotoxic agents, cease pt's antihypertensive meds, aim MAP 70, aim UO 1ml/kg/hr

Other Rx accepted:

NBM / Insulin – dextrose infusion

Non specific answers NOT accepted

Question 5

- **Authors - Dushan and Kevin**
- **Markers - Anthony Van Assche 117 Goodlet Street 0404534712**
avassche@hotmail.com

Marker Feedback:

"Good question, commonly asked topic however overall quite poorly done. I'm pretty sure I can pick the candidates that have dealt with a case of priapism in their ED.

I think essential knowledge is:

- low flow/high flow.*
- Think Viagra or intracorp injections. This is common.*
- Think Sickle cell and spinal cord trauma.*
- give analgesia, it's bloody sore!*
- Phenylephrine injections and/or drain corpora cavernosa*
- call urology!*

7-8 marks 11 is required knowledge to get a safe pass I believe.

Some candidates appear to confuse priapism with paraphimosis, because they suggest that prolonged traction is a method of detumescence. This is of course not appropriate in priapism. A few candidates suggest to jump up and down, or run up and down the stairs as a method of detumescence. I wonder where that comes from!

Candidates could be more specific with doses of Phenylephrine.

Be careful of what you write down in a rush: a few candidates (3) were keen to aspirate the corpus callosum...

Don't just say: 'drain shaft', be more specific and say 'aspirate corpora cavernosa'

Quite a few candidates seems to think that metamphetamines (CMA) cause priapism, however this is very rare. On the contrary CMA would commonly cause inability to get an erection.

Most candidates thought of Sildenafil as a cause of priapism and mentioned analgesia (systemic or penile block) which is encouraging. "

1. List the 2 types of priapism (2 marks)

- Ischaemic or low flow priapism, which is painful – most common
- Non ischaemic or high flow priapism, which often not painful and is rare and is due to arterial cavernosal fistula usually due to trauma

2. List causes of priapism (2 marks each for medical and drug associations)

- - Sick cell disease
- - Illicit substances like cocaine
- - Malignancy – leukaemia/ myeloma
- - Impotence agents – sildenafil/ Papaverine/ phentolamine
- - Latrodectism – red back spider bites
- - Trauma/ spinal cord injury
- - Antipsychotics

3. a Give treatment priorities in this patient (2 marks)

- Analgesia with morphine 5 – 10mg (reasonable alternatives also fine)
- Urology consult (urgent)
- Block (Described) e.g. Dorsal - also ok

b methods of Detumescence (3 marks)

- Oral pseudoephedrine 120mg immediate release
- Injecting vasoactive medications:
 - Phenylephrine 0.2- 0.5mg (diluted in 1ml) in to corpora cavernosa on one or both sides (2 or 10 O'clock positions), 2 – 4 cm distal to origin of the shaft.
 - Also accept injecting adrenaline 0.1mg (diluted in 1ml) can be repeated every 10 – 15 minutes, 4- 5 times.
 - Also accept Lignocaine 2% + 1: 100,000 adrenaline 2ml to one side or 1ml to each side
- Aspiration with or without irrigation of corpora cavernosa
- OR - Shunt surgery by urology

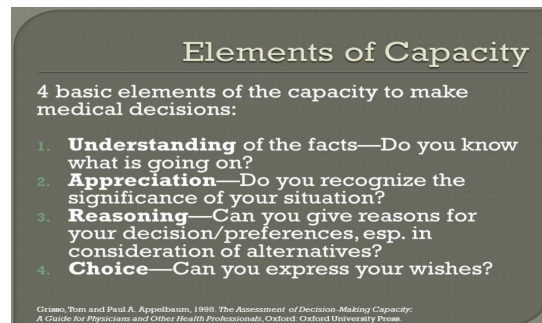
References: Roberts JR, Hedges JR (6th edition), Clinical Procedures in Emergency Medicine / eTG / Dunn

Question 6

Topic - Self-discharging' from the Emergency Department
Geoff Mifsud and Hua Chang

List four (4) essential elements of competency required for a patient to refuse treatment? (4 Marks)

- Ability to maintain and communicate a choice
- Ability to understand the relevant information
- Ability to appreciate the situation and consequences of refusal
- Ability to weight the information in a rational fashion



NB - broad variation in answers is acceptable - if candidates mention understanding, implications, and reasoning, as well as patient choice in a balance manner they should score marks for this question

State two (2) features in this case that can affect the patient's capacity to self-discharge against medical advice? (2 marks)

- Head injury
- Potential drug and alcohol intoxication

The patient is becoming increasingly agitated and tries to walk out of the department. List your immediate management steps in this situation. (6 Marks)

- Ensure staff safety- call for help including security
- Attempt verbal de-escalation whilst maintaining a safe distance.
- Enlist help of family member if appropriate
- Failing verbal de-escalation- team approach to achieve physical restraint in a resuscitation area in preparation for chemical sedation
- Chemical sedation to allow for assessment, treatment and ongoing monitoring, primary survey, eye and neurological examination
- Other reasonable Management strategies including disposition and specific treatments will be accepted for marks
- **No marks for unqualified investigations**
- Marks can be awarded for "seek and treat" likely causes of deterioration (e.g. BSL, Thiamine, Glucose)

Question 7

Topic - Borderline Trainee - Medical Education – how to complete and end of term assessment with a ‘borderline’ trainee? (based on guidelines)

Authors - Kavita Varshney and Danielle Unwin

Marker - Danielle Unwin

Feedback - relatively straight forward question...

You are preparing to meet your early phase trainee who has a borderline end of term assessment.

1 List 4 factors that may contribute to a trainee being in difficulty. For each factor list one example in the table below. (4 marks)

FACTOR:	EXAMPLE:
Physical health	Frequent sick leave Alcohol misuse
Mental health	Depression anxiety
Cultural / environmental	Poor equipment Lack of it support
Organisational / work place issues	Bullying Unrostered overtime Lack of resources Excessive sick leave

State 2 steps that you would undertake in preparation for this meeting. (2 marks)

- Is the concern about clinical performance / professional conduct / trainee safety
- Consider underlying issues
- Take an opinion from HR
- Gather opinions and specific examples
- Review previous assessments and mid-term assessment
- Organise an appropriate time and place for the meeting (non- clinical time, privacy)
- Involve their mentor
- Review their learning plan

- Review curriculum framework

1. State how you would structure the meeting (3 marks)

- Establish rapport
- Establish the concerns early in the discussion
- Identify the trainee's insight into the issues
- Establish which domains are of concern from the curriculum framework
- Identify any personal/ medical issues / clinical / environmental issues
- Explain the process of supporting the trainee in addressing the problem and the timeframe
- Understand the trainee's perspective
- Use open ended questions
- Reflect, clarify and summarise the meeting (This gives the trainee the opportunity to hear someone else explain what has happened, to check and perhaps to alter his/her understanding by gaining some insight; and for you to check whether you have properly understood e.g. Let me check ... there seem to be two main themes..... does that make sense to you?)
- End the interview on a positive note (Express confidence in the trainee as far as possible and reiterating your intention to try to help.)

1. List goals or outcomes to be established from the meeting (3 marks)

- Clear documentation of the discussion
- Write a performance improvement plan
- Discuss goals / strategies (SMART criteria: Specific (what is the expected objective, and output, and what will they do to achieve it) Measurable (how will the output be measured) Achievable (are the objectives, methods and outputs and timeframes realistic) Relevant (are the objectives relevant to the concerns raised) Time-bound (by when, with agreed milestones)
-
- Date for follow up interview
- Ensure the trainee is adequately supported (provide a mentor)

Question 8

Topic - Blood tests and Vital Signs – diagnostic – Addisonian Crisis +/- Complications of Addison's Disease

Authors - Danielle Unwin and Kavita Varshney

Marker - Una Nic Ionmhain

Feedback from Marker:

- **Will accept Addison's or Thyroid Crisis as answers**
- **NOT accepting 'med student' generic answers**
- **Lot of candidates did not given steroids despite recognising diagnosis**
- **Aggressive Rx of K 5.5 - 6.5 - would you?**
- **Preface generic answers with a target - i.e. - Symptom Mx - e.g. antiemetic/dose**
- **BEST answer stated "adrenal insufficiency - primary or secondary"**
- **Stem does NOT suggest Myxoedema "coma"**

Abnormalities:

- Moderate hyponatraemia
 - Moderate hyperkalaemia - 6.1
 - Hypoglycaemia - 3.2
 - Mild metabolic acidosis with normal anion gap of 13
 - Mildly elevated urea
 - Decreased cortisol and aldosterone
 - Primary adrenal insufficiency
- Hyponatremia - inappropriate secretion of antidiuretic hormone that is caused by cortisol deficiency, resulting in water retention
- Hyperkalaemia – due to hypoaldosteronism resulting in impaired urinary K secretion
- Secondary or tertiary adrenal insufficiency (pure cortisol deficiency)
- Slightly increased blood volume, dilutional hyponatremia, less urinary sodium loss, and no hyperkalemia.

List the MOST differential diagnosis

- **Hypoadrenalism (must say for one mark)**
- Also affect thyroid/thyroid crisis
- Hypoaldosteronism
- Hyperemesis from cannabis
- Gastritis
- Any other reasonable cause - or any four of above
- NO MARKS FOR NON SPECIFIC ANSWERS RELATED TO K or NA or NAGMA
- Drugs (ACE inhib, K sparing diuretics, CAH inhibitors)
- Renal Tubular acidosis
- Ketosis
- Sepsis
- Pancreatitis

List the management priorities (4 marks)

- Resuscitate / volume expansion
- Glucose
- Parenteral steroid – hydrocortisone or dexamethasone
- Treat underlying precipitant
- Serial electrolyte measurement +/- art line
- Antibiotics - seeks and treat infection causing presentation

-- test is used to confirm the most likely endocrine diagnosis (1 mark)

- Short Synacthen test (or equivalent)

Question 9 - approx 19 marks

Author - Daya Jeganathan

Marker - Felicity day

- Give two (2) Positive finding in the image provided (2 marks):

1.

Acute Subarachnoid haemorrhage across left Sylvian fissure region

2.

EITHER

Small Subdural (left)

OR

Small Contusion (left)

OR

Formal reported states there is:

Low density changes seen at the base of left frontal lobe above the orbital roof

- Give relevant negatives in the image provided. (4 marks):

1.

No local mass effect and no midline shift

2.

No hydrocephalus

3.

No intraventricular blood

4.

No drainable bleed such an extradural or very large subdural

5.

No visible fracture seen on the given image

- Unifying CT diagnosis? (1 mark):

L subarachnoid haemorrhage with L frontal lobe contusion. (Need to look for right occipital fracture in this context.)

- A scoring system to clinically grade and prognosticate the above diagnosis.
(need to give 6 marks – one for name and one for each acceptable line)

Grade	System 1	System 2	Prognosis
	Hunt & Hess	WFNS (GCS/motor deficit) World federation of NSx	
1	No symptoms- mild headache	15/ no deficit	70% survival
2	Severe headache- no neuro deficit except for CN	13-14 / no deficit	60% survival
3	Drowsy, confused- mild focal deficit	13-14 / with deficit	50% survival
4	Stupor- hemiparesis	7-12 / with deficit	40% survival
5	Deep coma- decerebrate	< 7/ with deficit	10% survival

Marks are lost for confused systems - 1 mark for each line

- List two (2) steps you should take to ensure this patient is appropriately managed. (2 marks)

1. Contact patient- direct or indirect by Police- needs to represent for admission.
2. Reassess clinical status and initiate neuroprotective management.
3. Admission under Neurosurgeon for close observation.
(other reasonable actions in context of consultant are accepted) Acceptable answers should related to: Capacity, acting within the law and duty of care

- List potential solutions to manage ED overcrowding. (3 marks)

1. Improve Staffing
2. Improve hospital occupancy- hospital avoidance program - HITH
3. Improve access to pathology/radiology
4. More frequent senior medical ward rounds for early disposition/discharge decisions
5. Streamline care plans for common problems
6. Nurse initiated protocols
7. ED short stay admissions

Question 10

Topic - Toxicology – severe poisoning with carbamazepine- seizures – peri-intubation and post intubation management (15 marks)

Authors - Satish and Naren

Markers - Satish Mitter

A 34 year old male with a background of anxiety disorder is brought to ED after admitting to a significant single ingestion of carbamazepine.

He presents to triage at 2 hours post-ingestion with nausea and abdominal pain.

An empty box of 200 mg carbamazepine with at least 60 controlled-release tablets missing is brought with him by his partner.

- i. i) Complete the following table of carbamazepine at least two (2) receptor or neurotransmitter effects in toxicity and corresponding clinical symptoms and/or 'toxidrome' (4 marks)

Receptor/Neurotransmitter	Clinical symptoms/signs
Sodium Channel	QRS widening, cardiac arrhythmias, Seizures
Muscarinic/cholinergic transmission	Tachycardia, dry mouth, urinary retention, delirium, paralytic ileus
NMDA/Adenosine (A1) blocker	Seizures

No marks for QT prolongation

What are your key management priorities in ED? (2 marks)

1. Resuscitate – if needed – fluid bolus if hypotensive, NaHCO₃ if QRS widening.
2. Decontamination/ Enhance elimination – MDAC, may need intubation and ventilation for airway protection.

Decontamination without qualification -= not acceptable

Non specific treatment - e.g. IVC, Urine Catheter or IV fluid bolus NOT accepted

List available techniques for enhancing elimination in this scenario and outline their indications and limitations. (5 marks)

i.

Technique	Indications	Limitations
MDAC	Intubated for CMZ poisoning. Seizures Toxic Symptoms Arrhythmia SR prep	1) Paralytic ileus 2) Charcoal bezoar formation, bowel obstruction, bowel perforation. 3) Distraction of staff from resuscitation/ supportive care priorities.
Dialysis	Prolonged coma CVS instability Rising serum levels after 48 hrs	1) Hemodynamic instability 2) Availability 3) Need vascular access, complications – bleeding, thrombus, infection.

Whole bowel irrigation or single dose charcoal NOT accepted

Question 11

Authors - Nikki Woods, Carla Morgan, Matt Bode

Marker - Nikki woods

Feedback on each part

Part 1 - generally done very well, only achieved full marks if you mentioned environmental injury (e.g. heat, snake bite or lightning strike) in answer

Part 2 - spot diagnosis

Part 3 - NOT done well - need to be specific to lightning injury - to achieve full marks needed to mention Paralysis and Ocular injury

Part 4 - NOT done well - had to mention ophthalmology/cataracts to pass

Fellowship trial exam question – lightning strike case

- List 4 possible differential diagnoses: 4 marks, must include an environmental injury
 1. Cardiac – AMI, arrhythmia
 2. Neurological – SAH, CVA
 3. Trauma - fall
 4. **Environmental injury – heat exhaustion, snake bite, lightning strike**
 5. Metabolic – hyper/hypoglycaemia, hyper/hyponatraemia (secondary to fluid losses or excessive intake)
 6. Infection – sepsis
 7. Toxins – alcohol or other
- Briefly describe the appearance of the patient's back (PROP) and what is the most likely diagnosis: (2 marks)
 - **Lichtenberg figures/ferning/feathering**
 - **Pathognomic of lightning strike**

- List immediate complications that you would assess for: (4 marks, must include keraunoparalysis and ophthalmological complications)
 - **Keraunoparalysis – transient limb paralysis or sensory changes with vascular spasm, reversible distal limb ischaemia**
 - Neurological injury – seizures, LOC, hemiplegia, peripheral nerve injury
 - Muscular injury – rhabdomyolysis, compartment syndrome
 - Respiratory Depression
 - Cardiac arrhythmia
 - **Eye injury – corneal burns, hyphema, retinal detachment, optic nerve injury**
 - Ear injury –perforated TM, sensorineural deafness
 - Burns – flashover, contact, punctate
 - Blast injuries
 - Secondary trauma

- List important delayed complications requiring specialty follow up (2 marks, must include ophthalmology follow up),
 - **Ophthalmological** – delayed cataracts
 - Neurological syndromes – paralysis, neuropathies
 - Burns Mx - i.e. scarring, contractures
 - Renal Failure

Question 12

Authors - Andrew, Syeda and Toby

Marker - James Dent

TOPIC - LV Aneurysm, Acute MI, or Pericarditis (with an ECG prop)

i) List four differentials to account for the ST elevation in this patient (4 marks)

- **Acute MI** with associated AF
- **LV aneurysm**
- **LVH**
- **Cardiomyopathy**

Must say MI plus one other in bold of above for two of the marks

Other answers accepted for two (2) marks:

- Pericarditis
- Cardiac infection.
- Congenital abnormalities.
- Coronary vasospasm (Prinzmetal's angina)
- Benign early repolarization - NOT ACCEPTED (reciprocal T wave changes)
- Left bundle branch block
- Brugada syndrome - need to Qualify 'unlikely' to be accepted
- Ventricular paced rhythm - NOT ACCEPTED
- Raised intracranial pressure - need to Qualify 'very unlikely' to be accepted

i) List three differentials to account for the anterior t wave inversions

Causes of T wave inversion in the anterior leads (V1-V4)

- Anterior ischemia, LAD obstruction ex. Wellens syndrome
- Posterior infarction
- Pulmonary embolism (secondary to right ventricular strain)
- Cerebral T waves
- Yamaguchi syndrome: an apical hypertrophic cardiomyopathy

List and justify additional investigations you would perform (2 marks)

Investigations	Justification
1) ECHO 2) FBC - qualified for GIT bleeding mentioned 3) CXR 4) TOE 5) CTPA/CTA given refractory pain - TROP / standard ECG not accepted - BSL not accepted - Irrelevant / superfluous tests not accepted	Reasonable justification

Question 13

Authors - Andrew, Khanh and Lex

Marker - Gonzalo Aguirrebarrena

In the table below compare and contrast these two conditions in terms of the key clinical features (8 marks):

	Cauda Equina	Guillain Barre (GBS)
Progression time course	weeks to months (accept more acute ie days if trauma/haemorrhage)	Days to weeks
Diminished Reflexes (area)	Ankle and Knee	All (accept that initially may be normal or even hyperreflexic)
Preceding Symptoms	Back pain, Injury (no marks for urine retention)	Viral type gastroenteritis or URTI Back Pain

ii) State a variant of GBS that predominantly affects the eyes (1 mark)

- Miller Fisher Syndrome

iii) List and justify two (2) beside investigations you would perform risk stratify a patient with GBS. (4 marks)

Investigations	Justification
<p>Spirometry Peak Flow End-tidal CO₂ (could argue this is a vital sign) ABG to determine ventilatory failure</p> <hr/> <p>MRI Spine - NOT accepted CT Brain - NOT accepted Bloods - markers of infection for epidural abscess - not accepted. NB - Other reasonable investigations that account for prognosis or time course may be accepted (note question is about prognosis rather than diagnosis)</p>	<p>Reasonable explanation for why either condition requires this investigation</p>

iv) State the definitive specific management for GBS to treat this patient and where it should occur (2 marks)

- **IVIG / and / or / Plasmapheresis** (NB BOTH - Titrated / Escalating Ventilatory Support, following appropriate monitoring AND Prevention of Complications such as aspiration pneumonia is important but non specific in this case: NOT ACCEPTED)
- **HDU / ICU setting**

Bold mandatory for full marks - not many candidates got both marks

Question 14

ED Short Stay Units – high risk patient presentations = DC form ESSU – possible risk of endocarditis (admin / management question)

Author - Amith Shetty and Andrew Coggins

Marker - Darmastuti Turner

1. Key considerations for short stay admissions (any 2 of a, b, c, d to pass)
 - a. High **likelihood for discharge** within 24h
 - b. **Clear diagnosis**
 - c. **Low complexity** case awaiting specific diagnostic test results
 - d. **Clear plan** for further monitoring and management in the ESSU and post-discharge
 - e. Clear instructions for **senior follow up review** if potential red-flags identified or raised post-test results during secondary review in ESSU
 - f. **Staffing** of the ESSU - junior v senior mix
 - g. What Space is Available? (e.g. monitored)
 - h. Are there **Business Rules** for the local ESSU?
 - i. Other answers accepted include-stable vital signs, absence of behavioural disturbance
2. Errors
 - a. Systems Factors (any 3)
 - ED **overcrowding** and **capacity** issues – impacts and pressures of **time targets**
 - ED interdisciplinary **communications** issue – **red-flag** findings not highlighted by nurses (**EMR** issue or team handover issue?)
 - Flaws and mitigation plans for rapid assessment **protocols** – insight into limitations of rapid assessments and need for detailed history taking
 - Protocols for completion of **mandatory components** of clinical history and **examination prior to discharge** of patient – discharge protocols
 - **Vital Signs** - if they were not normal why was this not flagged?
 - Other reasonable answers acceptable (broad acceptance)
 - b. Individual Factors (any 3)
 - Issues of **fixation error** – was there insight that this could be something more than a flu like illness?
 - **Diagnostic Momentum** and other cognitive biases

- What strategies, if any, were employed by the RMO and nurses when faced with managing a busy ED?
- **Knowledge** of sick v non-sick, knowledge of protocols
- **Probity v confusion** with other patients being managed to explain RMOs behaviours
- Was there enough **consultant cover / review of this case**
- **Failure to further discuss** case findings when influenza test negative and opportunity to discuss findings with resident
- **Discharge planning** and advice to patient on danger signs if thought suitable for discharge

3. Specific actions (any 3 but option A critical)

- A. Meet with resident and registrar involved in the case and offer support (critical) and cooperate with investigation**
- B. Meet with DEMENT / mentors to discuss key-learnings and emotional support / how to move forward
- C. Highlight key learnings/ issues discovered with director as requested
- D. Open-disclosure if appropriate and share key findings as part of learning experience
- E. Review department policies (if any) on role of rapid assessments and mitigation plans, communication/ handover policies at transfer points and discharge
- F. Review ED discharge policy and need for complete history and examination documented.
- G. Review ESSU business rules
- H. Disseminate information effectively (education and notice boards etc.)

Question 15

Renal Colic Imaging - Diagnosis and Management - up to 14 marks

Author - Mee Ling and Khanh Nguyen

Marker - Dr Mee Ling

Feedback:

“For part (2) of the question where percentages were asked for, most candidates could get some of the percentages range correct. For the disadvantage of AXR for imaging stones, consultant level answer should mention it has poor specificity and sensitivity as we hardly ever order AXR for diagnosing renal stones. However, most candidates cannot come up with this response. It should be expected that Candidates should be able to state the pros and cons of plain X-ray, ultrasound and CT scanning for most pathologies in ED as we order them frequently e.g renal stones, abdominal pathologies.

For part (3) of the question, most did well. However, some candidates failed to read the question carefully - “other than ureteric obstruction”. Hence, they stated big stones as a reason for admission when there are many other possible answers.”

Percent of patients with confirmed renal calculi with no red cells on urinalysis?

- 10-15% (accepted range 7 to 18%)
- NB - Conversely, 24% with flank pain and haematuria will not have radiographic evidence of renal stone

Table below regarding the different imaging choice available. provide ONE advantage and ONE disadvantage (9 marks)

- Ranges - accept 5% outside of those listed below:
- **½ marks for percentages and one mark for each pro and con**

Test	Sensitivity (%)	Specificity (%)	Advantage	Disadvantage
	Accept an additional 5% outside quoted ranges			
AXR	29-58%	69-74%	Used to follow stones	Poor sensitivity and specificity
Renal Ultrasound	63-85%	79-100%	No radiation, no known side effects, can be used in pregnancy	May miss small stones, insensitive in middle third of ureter

CT KUB	94-97%	96-99%	No contrast Rapid test Detects other diagnoses	Radiation No evaluation of renal function Cost, availability
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List three (3) **indications** for admission under the urology team (other than ureteric obstruction) (2 marks)

- a. Intractable pain or vomiting
- b. Urosepsis
- c. Single or transplanted kidney with obstruction
- d. Acute renal failure
- e. Hypercalcaemic crisis
- f. Severe medical comorbidities
- g. ** would also consider social circumstances as part of admission decision*
- h. ***other reasonable answers can be accepted in this sub-question*

Question 16

TOPIC - The hospital pharmacy incorrectly dispenses High Dose Isoniazid instead of Indomethacin –pt: status epilepticus, intubated, sent to ICU (hypoxic brain inj) – you are tasked with investigating...

Authors - Dr Felicity Day and Dr Romesh Singam

Marker - Laura H (W'gong)

Answer 1:

Antidote

- pyridoxine is indicated for isoniazid-induced seizures
- give 1g pyridoxine for each gram of isonizid ingested up to a maximum of 5g (70mg/kg in children) – give 5g IV if isonizid dose is unknown
- give as slow infusion of 0.5g/min until seizures stop
- also used for toxicity from other hydrazines e.g. Gyromitra mushrooms, rocket fuel (give 25mg/kg slow IV bolus initially); and as an adjunct in ethylene glycol toxicity (give 50mg IV q6h)
- 50% oral bioavailability and VD of 0.6L/kg, undergoes rapid extra-hepatic metabolism
- peripheral neuropathy from high chronic oral dosing of pyridoxine does not occur from acute treatment of an overdose
- only comes in 50mg vials!
- role of prophylactic isoniazid in asymptomatic overdoses is controversial

Broad acceptance on dose (including vial amount, max of 5 grams or specific dose)

State 4 sources of information you could use for the investigation

- *Clinical notes (pharmacist, doctor, nurse)*
- *Staff involved with case*
- *Family*
- *Best practice guidelines/evidence/policy or procedure documents*

List 3 factors that may increase the chance of errors occurring

- *Task factors – multitasking/routine/emergency, simple/complex, time constraints*
- *Practitioner factors – position/education and training/ experience/fatigue or stressors/task saturation of overload/regular team*
- *Team factors – roles/authority gradients/communication/culture/morale*
- *Protocols/Policies – available?/checklists*
- *Organisational Factors – staffing patterns/information design/records/QA programme/organisational culture*
- *Staffing – rosters/overtime/senior supervision*
- *Environment – access/isolation*

The root cause analysis concludes it was a prescribing error by a JMO. State potential recommendations for improvement from this RCA.

- *Any reasonable answer from following groups will get 1 mark. If candidates answer anything about firing/specific issues about JMO lose 1 mark.*
- *Education – individual and group*
- *Get an interpreter for non english speaking patients*
- *System change – example emeds, hospital pharmacist review for high risk meds,*
- *Process change – access to prescribing resources*

Question 17

Authors- Coggins, Boddy, Gopi Mann and Dushan Jayaweera (Joint)

Marker - Dushan Jayaweera

Feedback from Marker:

“27 of 42 passed the question. No marks for FBC or CRP. No marks for ETOH or CT brain (non specific to case). Marker would have liked more detail. For example, fluids 0.9% saline, bolus, recheck EUC, specific target endpoint(s)”

	Investigation	Justification
1	EUC Mandatory for one mark (would accept VBG or ABG) ALLOW UP TO TWO MARKS FOR COMBINATION if justified appropriately	Detect/monitor hyponatraemia (Pre renal AKI) as low Na potentiates Li toxicity. Hypernatraemia observed in nephrogenic diabetes insipidus (NDI) Urea/ creatinine (AKI) Prolonged elimination t _{1/2} in renal impairment. Maybe a marker of NDI and chronic kidney disease in long term use
2	Lithium level Mandatory for one mark	may confirm ingestion & aid in dialysis decision making
3	Paracetamol level	Screening test
4	Calcium level	hypercalcaemia in long term use
5	TFTs	hypothyroidism in long term use
6	Urine osmolality	high urine output & low urine osmolality (dilute) in NDI
7	BSL	Hypoglycaemia, patient is confused
8	ECG	Routine (Tox Handbook)

	Treatment	Justification
1	Intravenous hydration with 0.9% NaCl	Fluid resuscitation 10 – 20 ml/kg with a target UO >1-2mls/kg/hr. For dehydration/AKI and a high Na to facilitate Li excretion. (Consider 5% dextrose solution if hypernatraemic).
2	Dialysis	Ideally haemodialysis but if not available, consider SLED or CRRT. Indicated when Li conc >4mmol/L in chronic toxicity (with renal impairment). In acute toxicity, there is disagreement in the literature regarding specific plasma lithium concentration threshold (in those with normal renal function).
3	Stop lithium	sensible
4	Seek and treat 1) Sepsis 2) Nephrogenic Diabetes Insipidus	THESE ARE SPECIFIC TO PRESENTATION SO ACCEPTABLE. ALSO ACCEPT OTHER SENSIBLE ANSWERS IN CONTEXT OF CHRONIC LITHIUM FORM TOX HANDBOOK
NO Marks	NO MARKS ARE AWARDED FOR CHARCOAL NO MARKS FOR NON SPECIFIC TREATMENTS NO MARKS FOR INTUBATION NO MARKS FOR DISPOSITION or tox consult	

Question 18

Author- Andrew Coggins and Kenny Yee

Marker - Kenny Yee

OVERVIEW OF TOPIC - CPAP and BiPAP – indications and contraindications (pros and cons) - up to 14 marks

A 65-year-old presents with acute shortness of breath. An ABG is performed as part of your assessment.

Question 1

Interpret the ABG (3 points)

pH: Acidaemia

pO₂: Hypoxaemia

pCO₂: High (Therefore predominantly respiratory)

If Acute: Expected HCO₃ ~ 28

If Chronic: Expected HCO₃ ~ 35

Therefore acute on chronic respiratory acidosis

Question 2 and 3

Refer to ACI Guidelines Non-invasive ventilation guidelines for adult patients with acute respiratory failure

<https://www.aci.health.nsw.gov.au/networks/intensive-care/intensive-care-manual/stawide-guidelines/non-invasive-ventilation-guidelines>

CPAP:

Indication: For hypoxaemia

Patient Conditions: APO, Rib fractures,

Setting: 1 main variable with EPAP

BiPAP:

Indication: For hypercapnia +/- hypoxaemia

Patient conditions: COPD, OSA, Asthma

Setting: 2 main variables with EPAP/IPAP

Patient should be placed on BiPAP as initial trial due to acute on chronic respiratory acidosis. SETTING - 14/7 (+/- 3 either side of each value) FIO₂ target sats 88-92

A description of how CPAP is used for alveolar recruitment, decrease afterload and work of breathing while BiPAP augments alveolar ventilation.

Question 4

1. Home o₂ (NEED TO SAY EITHER//OR 1 or 2 for one of the marks)
2. Smoking cessation
3. Bronchodilators may keep patients out of hospital
4. Likewise there may be some benefit (needs to be qualified) from vaccines
5. OSA management if this is a major issues

Question 5

List contraindications (3 marks)

- Decreased level consciousness
- Not initiating own breaths
- Vomiting/haemoptysis
- Facial abnormalities including Facial burns/trauma/recent facial or upper airway surgery

- Patient intolerance
- Not appropriate level of care
- Untreated pneumothorax
- Inability to protect own airway
- Copious, unmanageable respiratory secretions
- Hemodynamic instability

Question 19

TOPIC - Management of Sickie Cell Crisis in ED up to 14 marks:

Jannatun and Harry

- **List 4 common precipitating factors to develop sickle cell crisis? (marks 2):**

INFECTION/SEPSIS IS MANDATORY FOR ONE MARK

A physiological stressor, for example **Infection**, **Dehydration**, **cold** and **altitude** causes sickle cell to lodge in the microcirculation and develop vaso-occlusive crisis.

Others acceptable answers:

- Cold weather
- Hypoxia
- Stress
- Acidosis
- Alcohol intoxication
- Trauma

MEDICATIONS NOT ACCEPTABLE

- **List other common presentations to the emergency Department of sickle cell crisis?**

MUST SAY AT LEAST 2 of the **BOLD** highlighted answers for 2 of the marks

Suggested Answers:

Vaso-occlusive crisis:

- 1) acute spinal pain
- 2) acute abdominal pain (the mesenteric occlusion of girdle sequestration)
- 3) **chest pain** (pulmonary vascular occlusion)
- 4) **Musculoskeletal pain**, fever (secondary to tissue necrosis)
- 5) **Neurological involvement** (TIAs, stroke, seizure, obtundation, coma)
- 6) Respiratory embarrassment and hypoxia
- 7) **priapism**
- 8) hand-foot syndrome (dactylitis of infancy)
- 9) haematuria (nephrotic syndrome, papillary necrosis)
- 10) skin ulcers of the lower limbs
- 11) retinopathies
- 12) Glaucoma
- 13) Gallstones

Haematologic crisis:

- 1) **Splenic sequestration**
- 2) Aplastic crisis
- 3) **Haemolytic crisis**

Infections:

- 1) Pneumonia
- 2) Meningitis
- 3) **Sepsis**
- 4) Osteomyelitis
- 5) Urinary tract infections

- **List management priorities in sickle cell crisis (marks 3):**

MUST SAY TWO **BOLD** ANSWERS FOR TWO MARKS

- 1) **Analgesia**: pain relief should commence early, intravenous opioid is the drug of choice, PCA for patients with ongoing pain.
- 2) **Intravenous fluid**: particularly important for patients with renal involvement, aim to establish UO 100ml/hour in adults.
- 3) **Oxygen**: supplemental oxygen
- 4) assessment of cause of current crisis and extent of complications
- 5) Antibiotic if febrile, prone to develop infection from encapsulated bacteria (H influenza, streptococcus pneumonia) due to functional asplenism from chronic splenic sequestration. Other common infections include pneumonia caused by above organism as well as mycoplasma pneumonia, meningitis, osteomyelitis caused by salmonella typhimurium, staphylococcus aureus, and E coli.
- 6) Exchange transfusion
- 7) Blood transfusion (if Hb <10 with acute crises)

List indications for exchange transfusion in sickle cell crisis? (marks 3):

Answers

- 1) Neurological presentations: TIAs, Stroke, Seizure
- 2) ARDS / Acute chest syndrome / Lung involvement (PaO₂ <65mmHg with FiO₂ 60%)
- 3) Sequestration Syndrome
- 4) Priapism (refractory)
- 5) Acute multi organ failure +/- Severe septic Shock

Question 20

Topic - New onset pancytopenia (hospital blood tests and/or GP letter) – differentials and diagnosis -

Authors - Greg White and Karina

Marker - Mana Ittimani

Feedback from Marker

- **Correct number of marks is 11**
- **7 was a clear pass**

Hb 60

WCC 0.4 (neut 0.1)

Platelets 6

- List differential categories for the above presentation and an example for each (6 marks) – table

Category	Example
Infective	viral (CMV/EBV)
Drug related	NSAIDs, antibiotics (Bactrim etc)
Neoplastic	acute leukemia / lymphoma
Environmental	lead toxicity
Nutritional	Anorexia Nervosa
Aplastic anaemia	idiopathic/drugs etc

Peripheral destruction/sequestration	splenomegaly
other	Primary bone marrow failure Autoimmune

Do not accept

- Non specific causes

MUST SAY 2 out of 3 in old for full marks

You ask your intern about examination findings.

- What specific examination findings are you looking for and why? (4 marks)
 - Haematological** – lymph nodes, bruising, petechiae (esp widespread rather than in SVC distribution) – Lymphoma/acute leukemia
 - Neurological** examination – thrombocytopenia and hx of numbness and headache
 - Signs of nutritional deficiency/anorexia
 - Temperature
 - Description And Distribution of the **rash**
 - Splenomegaly - peripheral sequestration
- Apart from repeating baseline tests, name specific that are most relevant initially and why? (4 marks)
 - Blood film** examination - diagnostic
 - If APML coags/**fibrinogen** important
 - Haemolysis** screen (can be associated) -e.g LDH
 - Group and screen – for blood products
 - CXR looking for adenopathy
 - MUST SAY - for one mark - CT brain – exclude spontaneous haemorrhage given neurological symptoms and platelet count 6**
 - Other reasonable answers
 - Renal function - HUS/TTP
 - Liver Function tests - Bilirubin

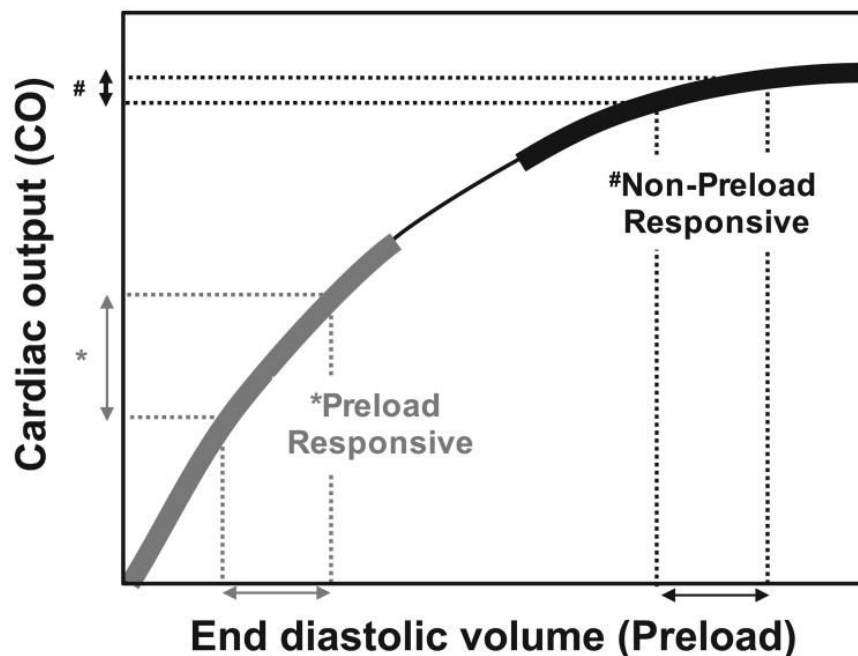
Question 21

Authors - Dr A Coggins

Marker - Hua Chang

i) State one (1) '*physiological mechanism of action*' of a judicious fluid bolus of improving perfusion in a shocked patient (1 mark)

Repletion of the intravascular volume to increase CO is necessary to improve tissue perfusion in most types of shock (Simply stating IV fluids or increase IV volume unqualified = 0 marks)



ii) List two (2) findings on a blood gas that would suggest a 'shocked state' (2 marks)

- Base Excess (evidence based in trauma of cut point of -8, accept variation either side)
- Bicarbonate
- Severe acidosis
- Elevated lactate - 2.5 is considered accurate cut point, accept 1.0 either side of this was accepted (MANY WROTE LACTATE = 4 - this is the old guideline - and many put no endpoints in their answer)

iii) List four (4) key findings on the patient's Electrocardiogram provided (4 marks)

- Low Voltage

- Tachycardia, moderate
- Electrical Alternans
- T wave inversions, various
- Other reasonable answer given ECG appearances

iv) State the three (3) MOST likely differential diagnoses to account for this patient's presentation (3 marks)

- Pericardial Effusion, Pericarditis (only one mark for either/or)
- Pulmonary Embolism
- Sepsis
 - Needed to say all 3 for full marks...

v) List two (2) other important differential diagnoses to account for this patient's acute presentation (2 marks)

- Any reasonable cause (H.H.H.H.T.T.T.T. that match this presentation)
- **Sepsis (OR accept specific causes such as pneumonia, empyema, lung abscess but only counts for one mark)**
- Pneumothorax
- Large **Pleural effusion**
- Pericarditis
 - Must say one in bold for one of the marks, otherwise max 2/3

Question 22 - Topic - Pregnancy Related Question:

Authors - Karina and Mark Salter

Marker - Mark Salter

Feedback - an easy question where marks should be accumulated

Which two (2) emergency treatments would you initiate in this lady with end-points?
(4 marks)

- **IV crystalloid bolus 20ml/kg** up to 3L for SBP > 100mmHg, U/O 0.5-1ml/kg/hr and HR < 100
- IV morphine 5mg/fentanyl 50mcg increments for reduction in pain score (reasonable range and variation acceptable)
- **Empirical IV antibiotics** – IV ampicillin/amoxicillin 1-2g, metronidazole 500mg IV, gentamicin 5-7mg/kg IV or Augmentin 1.2g
MUST SAY 2 BOLD for 2 of the MARKS
- **Other acceptable :**
- Noradrenaline 5mcg/kg/hr and titrate to SBP > 100mmHg or MAP > 65mmHg
- Antipyretic - e.g. paracetamol
- Confirm Pregnancy Status
- Consider PV/speculum exam
- USS for IUP/ectopic
- Early O and G team involvement / theatre preparation
- Blood products and fluids

Non specific answers such as

- Full non-invasive monitoring
- IV access
- o2

Are reasonable but if unqualified with the the above 'specific' answers are not specific enough for marks

List priority investigations that you would order with justifications (6 marks)

Investigation	Justification
Pelvic Ultrasound	Check for pregnancy, ovarian torsion, pelvic collection, appendicitis, RPOC
Venous/arterial blood gas AND/OR Lactate	Check acid-base status, lactate for evidence of end organ hypoperfusion
	lactate for evidence of end organ hypoperfusion
Full blood count	Check haemoglobin for evidence of anaemia as a surrogate for bleeding, WCC for infection and platelets for DIC
Coagulation profile, D-dimer, Fibrinogen	Check for evidence of evolving DIC
Blood Group and screen	For transfusion if significant anaemia and to check Rh status in case of pregnancy

What is the most likely unifying diagnosis? (1 mark)

Septic abortion/chorioamnionitis

Name complications of this process (3 marks)

- Perforation
- Abscess formation
- Septic shock
- Disseminated intravascular coagulation
- Haemorrhage + exsanguination
- Deranged LFTs - Fitz Hugh Curtis Syndrome
- Infertility
- Death
- Other reasonable complications
 - Anaesthetic complications

QUESTION 23 - Topic - Altitude / remote medicine (Double)

Author - Chris Cheeseman

Marker - Matt Bode

Feedback

"Some general feedback:

- If there is one mark and one space for a question, don't waste your time by writing eg three points
- If a question asks for side effects you can sometimes get away with writing general ones like 'nausea', this is a fellowship examination and so answers should be specific, e.g. acetazolamide causes urinary frequency, tinnitus, etc. Whether you got the mark would be examiner dependent and so it is best to be cautious and try to write something specific. Better answers were Metabolic Acidosis etc.
- If a question asks for a drug, write a dose regardless of whether it is stipulated in the question – if a nurse asked you to write a prescription, you wouldn't just write 'dexamethasone' and leave the rest up to guess work.
- Write something, anything. Don't ever leave an entire question blank – you need all the marks you can get!

Some specific feedback:

- Universally answered poorly was the second part to the question regarding the climber refusing to take prophylaxis. Although as part of the mark scheme capacity was mooted, this was only attracting one mark. The rest of the answer required specific non-pharmacological prophylaxis of AMS:
 - § Gradual ascent above 3000m
 - § Overnight rests no more than 300 metres above previous night's rest
 - § Rest day for every 1000m ascent
- I think this last point needs explaining as I imagine there will be a fair bit of controversy around the allocated marks."

You are requested to supply a prescription medication that is commonly used to prevent acute mountain sickness. What medications that you could supply and what is the dosing regimen that you will recommend for each drug?

- The first option is **ACETAZOLAMIDE**. (an acceptable dose range – 250-500mg)
 - a. The correct dosing regimen is 250mg BD OR 500mg slow release OD, to be started at least 1 day prior to ascent commencing. Correctly identifying the dose is insufficient for the correct answer and it is essential to identify starting the drug 1 day prior to ascent.
 - b. Recent evidence suggests that 125mg BD may be equally effective and cause less adverse reactions.
- An alternative drug, particular to those who are allergic or intolerant to acetazolamide (all climbers have been to altitude previously and may be able to inform you of this) is **DEXAMETHASONE**. (use an acceptable dose range – 2-4mg)
- There are 2 potential regimens, either of which is acceptable, either 4mg BD or 2mg QDS. The important additional, which is essential to the answer, is that the drug should not be used for more than 10 days

For each of the above drugs, list the potential side effects that are specific to that drug? (6 marks)

NB - General adverse reactions applicable to any drug should not be accepted as correct answers. No particular order to the side effects.

ACETAZOLAMIDE

- | | |
|--|---|
| • Nausea, vomiting, diarrhoea - "GI disturbance" | • Confusion |
| • Tinnitus | • dizziness |
| • Urinary frequency | • Allergic skin reactions |
| • Increase volume of urine | • Photosensitivity |
| • Drowsiness | • Stevens-Johnson syndrome / toxic epidermal necrolysis |
| • Paraesthesia to hands and feet | • NAGMA |

DEXAMETHASONE

- Adrenal suppression
- Addisonian crisis following rapid cessation
- Hypertension
- Cardiomyopathy
- Pancreatitis
- Ocular (Conjunctival haemorrhage, cataract, retinal vein occlusion, conjunctivitis, uveitis)
- Depression, Mania, Aggression
- Hyperglycaemia

Under what conditions would the above drugs no longer be required?

- Any drugs that are used to assist in acclimatisation should be discontinued under the following conditions;
- When the maximum altitude (eg: the summit) has been achieved, further ascent will not take place and the climber will descend.
- When the maximum altitude has been achieved and no further ascent will take place, but immediate descent will not take place, the medication should be discontinued after 4-5 days, since acclimatisation will have been completed and there is no further benefit to the drugs.

One of the climbers declines to take this. What is the most important advice you will offer and exactly how will this be accomplished?

- Assessment of reasoning, including capacity
 - 'train high sleep low'
 - slower ascent
 - rest days
 - establish prior history
- Duty of care principles, act within the law
- Gradual ascent above an altitude of 3000 metres
- Overnight rests no more than 300 metres above previous night's rest
- rest day every 1000 metre of ascent

NB - The key to this answer is the altitudes and how the ascent is managed. It is essential to state the relevant altitudes

As the expedition is at an altitude of 4,500 metres, one of the climbers approaches you and complains of headache, dizziness, nausea, vomiting, fatigue, anorexia and insomnia. Your clinical examination of the climber finds a mild tachycardia, normothermia, mild peripheral oedema and a clear chest on auscultation. What is your diagnosis? (1 mark)

- Given the non-specific symptoms and lack of signs, this represents **ACUTE MOUNTAIN SICKNESS** as the symptoms have not progressed to high altitude pulmonary / cerebral oedema. Stating either HAPE or HACE as the answer is **NOT correct** and will not attract a mark.
How will you treat this climber? Give 2 methods each for non-pharmacological and pharmacological approaches.

PHARMACOLOGICAL

- | | |
|--------------------------|---------------------|
| • Paracetamol | • Dexamethasone 4mg |
| • Aspirin | QDS |
| • Ibuprofen | |
| • Sumatriptan | |
| • Acetazolamide 250mg | |
| TDS – note the increase | |
| in dose from prophylaxis | |

NON-PHARMACOLOGICAL

- Stop further ascent and rest

- Rapid descent if further deterioration occurs
- Descent should be to an altitude lower than where symptoms commenced

What is this equipment? (1 mark)

Portable **hyperbaric chamber**, otherwise known as a Gamow bag

What are the clinical indications for its use? (2 marks)

High altitude pulmonary oedema, High altitude cerebral odema AND the inability to descend rapidly.

The only effective treatment for these conditions is to rapidly descend and this device is a substitute for that descent when the climber cannot descend rapidly (eg: adverse weather, injury, technical difficulties etc). The afflicted climber is placed in the bag and air is pumped in at a pressure exceeding the ambient pressure. This has the effect of essentially lowering the altitude of the climber and resolving the HACE/HAPE. Once the climbers symptoms resolve, the bag can be dragged to a lower altitude if possible, but the pressure could be slowly reduce, allowing a slower acclimatization.

What ambient temperature would you expect at the summit of this peak? (1 mark)

The expected ambient temperature at 7,181 metres is minus 31 degrees celsius. A reasonable +/- degree answer either side would be an acceptable answer. The candidate should recognise that this is the average temperature, without windchill.

Units **MUST** be included in the answer to score a mark and simply stating a number is not acceptable

Question 24

Author - Dr Rhiannon Browne

Marker - Dr Rhiannon Browne

Feedback from Marker:

- *“Part I - only one candidate mentioned authorisation from ED director OR executive. Many identified stakeholders but did not consult them. Purpose of audit is to identify issues, no just for compliance. A few wanted to establish the need for a policy - this is waste of a line. Stem says you are asked for one.*
- *Part II - Done well, but careful with “double dipping” - writing “consistent mechanism” and “no trauma”*
- *Part III - Most failed to mention flexion. No mark was given for imprecise anatomical terms such as “lateral rotation” of the elbow.”*

*Topic - Design process for a protocol for the management of pulled elbow in the ED
– question on what are the key issues for the protocol etc.?*

- **Develop a policy on paediatric pulled elbow for your urban district Emergency Department**

Outline the key steps (6):

- a. **Gather data**, eg literature review, review existing policies/guidelines/frameworks
- b. Consult **stakeholders**
- c. AND - Director or Executive **authorisation** of policy
- d. Have Policy **peer-reviewed**
- e. Policy Writing
 - i. Write **draft** policy
 - ii. Review/**edit** policy with stakeholders and re-draft
- f. Roll-out/**implementation**/education within the department
 - i. Identify Clinical **Champions** and **Educational** strategy
- g. **QA Cycle**
 - i. Monitoring, audit and review of outcomes including adverse incidents

List inclusion or exclusion criteria for the pulled elbow policy, i.e. 5 features consistent with a clinical diagnosis of pulled elbow (4):

- a. Age 12-48 months
- b. Refusal to move elbow, or and/or complaint of pain
- c. Twisting or pulling mechanism with minimal trauma – no significant traumatic mechanism/fall
- d. No (gross) deformity
- e. N.V. intact
- f. No concerns about social circumstances or NAI
- g. No point tenderness over clavicle, humeral condyles or distal radius

Describe the procedure for reduction of the pulled elbow (2):

- h. Latest Evidence if HYPERPRONATION AND THEN FLEXION
- i. Pronation OR supination of elbow (alternative techniques) followed by Flexion at elbow - generally do flexion last not first - incorrect order results in loss on one mark
- j. informed consent and adequate analgesia

Question 25

Karen Greenlees and Cindy Hastings

Marker - Farzad Jazayeri

- Correct names for 3 out the 4 FAST views, Lung windows not acceptable
 - Non specific answers like 'liver' not ok
 - Ideally state - RUQ/Morrisons, LUQ/SRA/Pericolic Gutter, Pelvis/Pouch of Douglas/SubXiphoid
- Negative
 - *Positive or Equivocal incorrect*

Advantages:

- **MUST SAY FOR ONE MARK - No/minimal radiation**
- No Sedation Required
- (Relatively) Painless
- Rapid
- Bedside Test / Mobile Test - Available in resus room - Parent can stay
- May be easier to perform than in adults (e.g. Body Habitus)
- Repeatable
- Non-invasive

Disadvantages:

- **MUST SAY FOR ONE MARK - Reported to be less reliable than in adults**
- Operator dependent
- Neg U/S does not rule out intra abdominal injury
- Can miss retroperitoneal injuries
- Can miss hollow viscus injury

Question 26

Author - Laura Brown / Marker - Laura Brown

Feedback for Q26.

- Good performance overall, most passed
- Albeit a straightforward question on a common + popular topic.
- A few people left the question blank - assume issues with timing
 - ↳ this was an easy question to score marks
 - ↳ terrible waste to leave blank
 - ↳ cannot overemphasise the importance of time management
 - ↳ candidates should be sick of this advice but it still happens - DON'T BE THAT GUY!!!

General points:

- 1 - If asked for features or history, don't answer with signs you would find on examination
- 2 - BE SPECIFIC
 - lots of answers gave "signs of raised ICP" - what signs are these? You must show the examiner that you know.
 - "Vomiting" - lots of people with headaches vomit
 - for it to be a "red flag" you must qualify it as "profuse" or "severe" or "intractable" etc.

- Candidate Number Candidate
Candidate Number
DATE
- "thunderclap" - when asked for historical red flags - a patient will not describe their headache as "thunderclap". Demonstrate your knowledge by specifying
 - sudden onset
 - maximal within minutes of onset.

- 3 - Indications for CT prior to LP
- again must be specific
 - "suspected meningitis"
 - "suspected malignancy"
 - "suspected ICH"

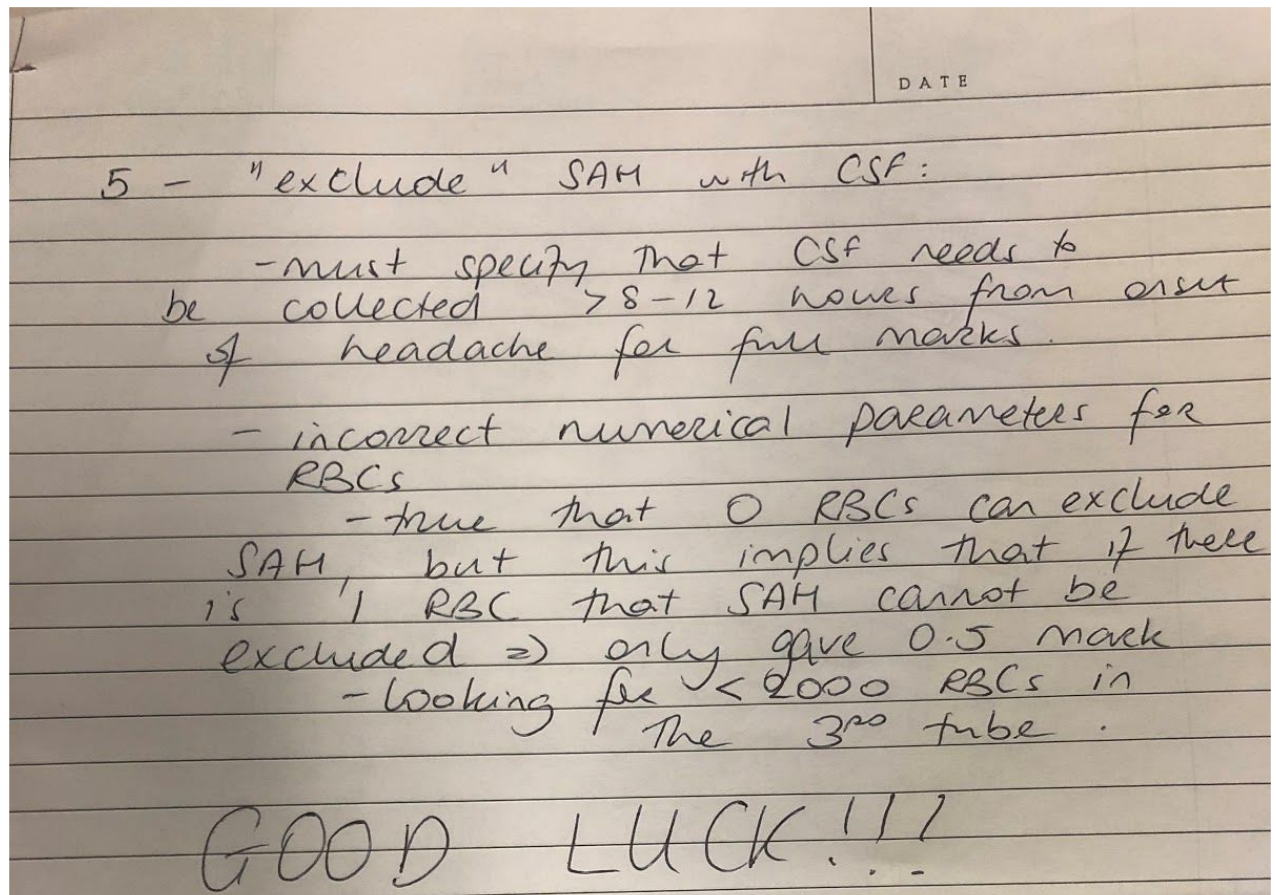
WHY do you suspect it? ie what signs would prompt you to perform CT prior to LP?

- eg - ↓ GCS
- high fevers
 - hx of malignancy
 - immunocompromise etc...

- 4 - ↓ likelihood of post-LP headache.

- measures that are not well based in evidence were not accepted
 - eg supine positioning
 - lying flat for hours
 - hydration
- nor were nonspecific measures eg "simple analgesia"

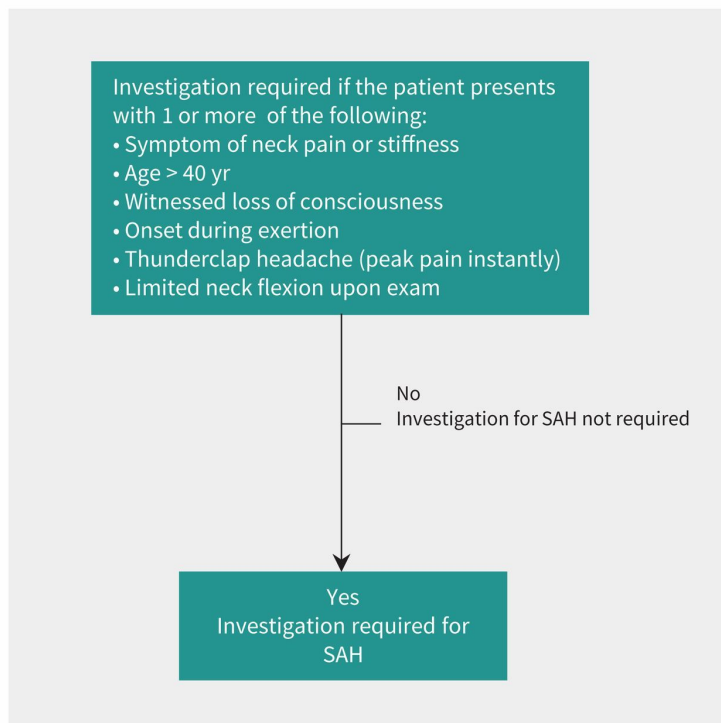
- looking for:
- small gauge
 - blunt / non-cutting
 - bevel parallel to dural fibres
 - replace stylet before remove needle.



List "red flags" on history that would make you concerned for a diagnosis other than a benign headache (5 marks)

1. New or different character to previous headaches
2. Sudden onset
3. Maximal within minutes of onset
4. Coagulopathy /
5. Recent trauma
6. Pregnant / post-partum
7. Focal neurology
8. Profuse vomiting
9. PHx SAH
10. FHx SAH
11. Hx severe HT

Alternatively SAH (**Ottawa rules**):



List indications to perform a CT brain prior to an LP

1. Altered level of consciousness
2. Immunocompromised patient and other 'high risk patients' (e.g. IVDU)
3. Focal neurological deficit
4. Signs of raised ICP (eg papilloedema)
5. History of CNS lesion (eg tumour or abscess)
6. New onset seizures within the preceding week
7. Suspected SAH

List measures that you may take to reduce the likelihood of post-LP headache

1. Small gauge needle
2. Bevel parallel to dural collagen fibres
3. Non-cutting/ blunt needle
4. Replace stylet before removing needle
5. No Marks for lying flat or IV fluids
6. Mark for Caffeine but not for Blood Patch as this is done later

State reason why a CT angiogram does not negate the need for LP if there is a high index of suspicion of SAH

1. >1% of the population may have asymptomatic aneurysms on CT, a LP is still required to diagnose an aneurysm that has bled
2. Not clear if it has bled (e.g. If there has been an aneurysm that has bled, vasospasm may make the aneurysm undetectable on CT)

State CSF findings that “rule out” SAH on LP (2 marks)

1. RBCs <2,000 in the third tube
2. Absence of xanthochromia (spectro, rather than visual) - **qualifier is required or loss of ½ mark** AFTER >8-12 hours (needs to be a latent LP)

Question 27

Authors - Khanh and Lex

Marker - Mark Garcia

i) State a brief description of the rash shown (2 marks)

- Classic E.N. - it is Typically a Slightly Raised, Tender rash
- = Lower limbs especially **ANTERIOR** and **BELOW KNEE**
- Characteristic appearance like fading bruises / poorly circumscribed
- Nodular/Raised
- **Purple** colour

ii) State the MOST likely type of rash shown in the photograph (1 mark)

Erythema Nodosum

• <http://mrpcandme.blogspot.com.au/2010/09/mrcp4revision4battle42114erythema.html>

iii) List three (3) differential diagnoses to account for the rash (3 marks)

LONG LIST (the following is an abbreviated list):

- **MUST SAY HIV FOR ONE MARK**
- **Pregnancy** and **COC** (may improve postpartum)
- **Infectious**** - (****MUST GIVEN SPECIFIC EXAMPLE**) Streptococcal infections, TB, Toxoplasmosis, Chlamydia, Yersinia, Hep B, others (but not specifically HIV, although the stem may suggest this)
- **Drugs**** - penicillin, sulphonylurea, oestrogen, irodines, sulfonamides
- Autoimmune - Inflam bowel disease Sarcoid SLE
- Malignancies – Lymphoma, Leukaemia

iv) List and justify two (2) investigations that are required during this presentation

- Any reasonable SPECIFIC test for causes above, no marks for ECG, BSL etc
- CXR – TB / Pneumonia / Sarcoid
- FBC – Leukemia / Lymphoma
- Autoimmune screen
- HIV
- HCG - **optional** but preferable given COC and pregnancy are causes

v) State two (2) steps in initial management of this rash (2 marks)

- Ibuprofen/NSAID (drug and dose)
- Elevate / Rest
- Compression stocking
- Steroids if severe (dose)
- Derm Review / ?Biopsy

- Abi - if suspected bacterial cause
- Stop meds AND / OR contributing drugs eg COC

Marker Feedback:

1 MALARIA RARELY CAUSED A RASH.

2 IF I CAN'T READ YOUR WRITING, I CAN'T GIVE YOU A MARK.

3 UNFORTUNATELY, DUE TO THE WAY THE QUESTION WAS STRUCTURED, IF YOU DIDN'T GET THE DIAGNOSIS RIGHT YOU WOULD HAVE STRUGGLED TO GET MARKS IN SUBSEQUENT QUESTIONS.

→ IN THE REAL EXAM WE TRY TO ENSURE THAT THE LATER PARTS OF THE QUESTION AREN'T DEPENDENT ON GETTING THE FIRST PART RIGHT