The Prince Charles Hospital
The Royal Brisbane & Women Hospital
Redcliffe Hospital
Caboolture Hospital
SCUH

Metro North Hospitals and SCUH

ACEM Fellowship Trial Examination

2018.2

SAQ Paper

Answer only

Booklet Two

Queensland Government

SAQ 10 (9 Minutes)
(Total 18 marks) Pass mark: 12/18

You are working in the retrieval service when you receive a call for advice from a junior medical officer who is working in a small rural hospital 300km from the tertiary centre.

They have a 34 year old male patient who has sustained burns to their chest and arms whilst lighting a fire on their farm.

1. **List 2 different methods that could be used to estimate the TBSA% of this patient's burns. (2 Marks)**

- Lund and Browder chart
- Rule of nines
- Palmar surface

2. **What key features of this patient's assessment would suggest the presence of airway burns. (4 Marks)**

- Stridor
- Hoarse voice
- Carbonaceous sputum
- Singed facial hair
- Nasal/oral burns
- History of fire in a confined space

3. **What features in patient presentation and assessment would indicate IV Fluids should be given? (3 Marks)**

- If >15-20% TBSA for adult patient
- If coexistent traumatic injuries
- If delayed presentation
- If inhalation injury/airway burns

4. **If fluids are required, outline your advice about how to calculate the initial fluid requirements for this patient. (2 Marks)**

- Modified Parkland Formula
- 3-4mLs x TBSA% Burn X Weight (kg) = total in first 24hrs
- **1/2** Total Fluid Volume to be given in **first 8 hours post burn**
- **1/2** Total Fluid Volume to be given over **next 16 hours**

5. **List 6 criteria that would indicate that <u>this</u> patient requires referral to a burns centre for ongoing management. (3 Marks)**

- Burns > 10 % TBSA in an Adult (partial and full thickness)
- Full thickness burns > 5% TBSA
- Burns to special areas (eg face, hands, feet, perineum, genitalia, and major joints)
- Circumferential burns
- Burns in the presence of major trauma
- Burns with significant co-morbidity (Type 1 Diabetes, CCF)
- Unable to managed in the current level of hospital
- Burns with inhalation injury

6. Complete the table by listing 4 early (<72hrs) and 4 long term (>72hrs) complications that may occur from this patient's burns.

(4 marks)

<u>Immediate</u>

Infection/Sepsis

Hypovolaemia from fluid loss

Electrolyte disturbances – Hypokalaemia, Hyperkalaemia

Acute Respiratory Distress Syndrome

Acute Kidney Injury

Carbon Monoxide Poisoning

Hypothermia

Rhabdomyolysis

Chest rigidity & hypoventilation from eschar

<u>Long term</u>

GI Ulcer

Disfigurement -Cosmetic/Scarring

Loss of function

Loss of income/employment

Contractures

Psychological

Restrictive chest wall/lung disease

Pass mark: 12/18

SAQ 11: (6 Minutes)
(Total 12 Marks) Pass mark 8/12

A 45 year old man known to be HIV positive presents to your department with fever, non-productive cough, weight loss and mild confusion.

His vital signs are:

PR 105/min
BP 110/70
Sats 94% on room air
Temp 38.6 degrees
BSL 5.4

1. **List 4 important differential diagnoses to be considered in this patient.**

(2 marks)

- Pneumonia – streptococcal and atypicals such as PJP
- Tuberculosis
- Meningitis
- Toxoplasmosis
- Cerebral lymphoma
- Cryptococcosis
- HIV encephalopathy

2. **List and justify 4 specific investigations that will help in differentiating the cause of this patient's illness**

(4 marks)

Investigation	Reason
Bloods – viral load/CD4 count	Identifying AIDs defining conditions
CXR	Pneumonia/TB
LP	Meningitis/Cryptococcosis
CT head	Cerebral lymphoma/toxoplasmosis

0.5 mark only if investigation not adequately justified.

3. **The patient's new girlfriend is in attendance. She is concerned re her risk of having contracting HIV. List 4 factors that influence your commencing PEP in this patient.**

(2 marks)

- Type of intercourse (nil indication for oral intercourse)
- Time of exposure (if > 72 hours minimal evidence for commencement of PEP)
- Viral load (if source patient has undetectable viral load no PEP needed)

- If she is pregnant (commencement of PEP in pregnancy needs discussion with ID specialist)

4. List 4 things that a clinician must discuss with patients to whom they are prescribing PEP. (4 Marks)

• PEP provides high levels of protection but does not prevent 100% of infections
• the importance of adherence
• the potential adverse effects of treatment and possible drug interactions
• measures for preventing re-exposure to HIV / safe sex
• follow-up HIV testing
• HIV seroconversion signs and symptoms

Pass mark 8/12

SAQ 12: (6 Min)
(Total 12 Marks) Passmark; 7/12

A 39 year old woman presents to your emergency department complaining of a headache. She is G1 P0 at 36 weeks gestation.

Her vital signs are:

Temp	36.7
HR	90
BP	150/90
SaO2	99% RA

Questions:

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

- **Pre-eclampsia**
- Hypertension in pregnancy
- Cerebral venous thrombosis
- Migraine
- SAH
- CVA
- Meningo-encephalitis
- Tension headache

2. For the table below, list examination or investigation features that help you to differentiate between these possible diagnoses?
   Include a justification. (7 marks, 0.5 for each space) 5/7

Examination/ Investigation	Justification
Reflexes	Presence of clonus and hyper-reflexia- pre eclampsia
Neurological exam	Focal deficit- ICH/SAH/cerebral venous thrombosis
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/ bedside USS	Fetal well-being

SAQ 13:(6 minutes)
(Total 12 marks) Passmark = 8/12

You are the ED consultant on the evening shift in a busy tertiary hospital. The following patient is brought in by ambulance after an altercation with a workmate.
His vital signs are as follows:
HR 90/min
BP 110 /75 mmHg
SpO2 96% on room air
GCS 15/15

1. **Describe the key feature of this injury. (1 Marks)**

   - Penetrating neck injury with weapon device left in-situ
   - Involvement of left anterior triangle in zone 2 of neck

2. **List 5 signs that would raise concern that this patient's airway is at risk from this injury. (5 marks)**

Hard signs
- Expanding haematoma
- Thrill/bruit
- Air or bubbling in wound
- Haemoptysis
- Tracheal deviation
- Stridor
- Hoarse voice
- Significant or rapidly expanding subcutaneous emphysema

3. **The patient develops worsening hypoxia and respiratory distress. List 6 immediate actions you would take to manage this? (6 Marks)**

Maintain airway patency through upright positioning in position of comfort.

Optimise oxygenation 15L O2 via NRBM (NOT suitable for NIV or HF nasal O2)

Seek and treat tension pneumothorax or haemothorax

Notification of anaesthetics/surgical team for attendance and assistance re: possible surgical airway/tracheostomy

Prepare for emergent direct/video assisted laryngoscopy for RSI with Ketamine 2mg/kg and Rocuronium 1.2mg/kg

Prepare for difficult airway. Surgical airway kit open, neck prepped and senior clinician scrubbed for surgical airway.

SAQ 14: (6 minutes)
(Total marks 12) Pass mark 8/12

A 7 year old boy presents to your ED with Right sided testicular pain. You work in a hospital that does not operate on children <10yrs of age.

1. **List 4 differential diagnoses other than testicular torsion? For each diagnosis, state a specific examination finding related to that condition.**

(8 Marks)

Diagnosis	Exam finding
Torsion appendix testis	Blue dot sign
Epididymo-orchitis	Tender hot hemiscrotum
Haematoma	Brusisng to scrotum/groin
Inguinal hernia	Bowel sounds present/reducible

Torsion appendix testes
Orchitis/Epididymoorchitis
Trauma (Haematoma, Testicular rupture)
Renal colic
Inguinal hernia
Others acceptable...

2. **The registrar looking after the patient reports back to you that the surgical registrar at the local receiving hospital is refusing to accept the patient until an ultrasound has been performed.**
State your actions in response to this. **(4 Marks)**

Phone Surg reg directly to explain clinical concern and that USS is inappropriate
Escalate to Surg consultant if any further resistance
Arrange for immediate transfer of patient, once appropriate ED care instituted
Consider need for involvement in quality process (will accept a wide range of options here)

Arrange transport to local receiving hospital – private vehicle or ambulance – no delay
Speak to ED consultant at receiving hospital to advise of time critical emergency & need for immediate transfer

Speak to Surgical Consultant at receiving hospital and escalate to medical superintendant of both hospitals if necessary
Documentation of refusal & your escalation of management
Medical Superintendant informed
Make appropriate report –PRIME
Consider using as M&M case
For review post event to ensure appropriate WUG to avoid unnecessary delays in time critical emergency

SAQ 15 :(6 minutes)
(Total 12 Marks) Pass mark:8/12

A 55 year old male patient presents with a painful, swollen foot for the past week.

His vital signs are:

Temp	38.1
HR	95
BP	95/50
RR	20
O2 Sats	96% RA

Questions:

1. Describe the pertinent findings on this X-ray & state the most likely diagnosis.
(2 marks)

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)

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)

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

4. List 2 factors that would give the patient with this condition a poorer prognosis

(2 marks)

Advanced age

Significant comorbidities

Underlying circulatory compromise of limb

Late presentation

Delay to surgical debridement

Passmark: 8/12

SAQ 16: (6 Minutes)
(Total marks 12) Passmark :8/12

A 56-year old patient presents to your emergency department on a Saturday evening.
He is known to have end-stage renal failure and is on continuous ambulatory peritoneal dialysis. He is complaining of fever and diffuse abdominal pain.
a. State the criteria required for the diagnosis of peritoneal dialysis associated peritonitis.

(3 marks)

Cloudy dialysate and ≥2 of fever, abdo pain, nausea, vomiting, diarrhoea
PD fluid shows WCC> 100 /mm³ of which ≥50% are PMN
Positive Gram stain or culture

b. Name three organisms commonly causing peritoneal dialysis associated peritonitis

(3 marks)

Staph epidermis/ coagulase-negative staph (25-40%)
Staph aureus (10-15%)
Strep species
Gram-negatives
Anaerobic bacteria
Fungi

Must have bold
c. Complete the following table for the empiric treatment of suspected peritoneal dialysis peritonitis. (6 marks). – 3 lines only in table for 6 marks

Drug (1mark)	Dose (0.5 mark)	Frequency and route (0.5 mark)
Cefazolin	**15mg/kg**	**Intra-peritoneal, daily**
Gentamicin	**0.6mg/kg up to 50mg**	**Intra-peritoneal, daily**
Heparin	**500 U/L**	**Intra-peritoneal, each exchange**
Nystatin	**500,000 IU**	**Oral qid**

Must have bold

Source Queensland Health peritoneal dialysis peritonitis clinical pathway; Tintinalli

SAQ 17: (6 Minutes)
(Total Marks 12) Passmark 8/12

A 4-month-old male infant is brought to the ED with 2 days history of progressive irritability and fever.

His vital signs are:
HR 180
RR 38
Sat 96%
Temp 38.7

His photograph is included in the props booklet:

Questions:

1. **List the key features of the above photograph:**

(3 marks)

Distressed infant
Erythema to face, chest, abdomen, perineum and front of both legs
Evidence of extensive DESQUAMATION to upper chest, right arm, abdomen, perineum and right leg
No involvement of mucous membranes
Difficult to give a % as can't see back, extensive desquamation

2. **What is the most likely diagnosis?** **(1 mark)**

Most likely Staphylococcal Scalded Skin Syndrome – exotoxin from Staph Aureus infection

3. **List 3 other possible causes for the above presentation:**

(3 marks)

Stevens Johnson syndrome- TENS (has mucosal involvement)
Burns- chemical, thermal
Non-accidental injury
Dermatitis- contact/exfoliative
Necrotising fasciitis
Omphalitis
Staph or strep infection spreading (without exotoxin)

4. List your immediate management steps, including any drugs, doses and end points. (5 marks)

Fluid resuscitation- normal saline if markers of shock – 20mls/kg normal saline

Check BSL- ensure normoglycemia

Temperature control- potential for hypothermia- cover and keep warm; monitor core temperature

IV antibiotics- Flucloxacillin 50mg/kg
- Send swab for M/C/S to guide further Abs

Analgesia- will need IV opiates morphine 0.1mg/kg doses, anticipate need for infusion

SAQ 18 (9 minutes)
(Total 18 Marks) Passmark 12/18

A 38 year old female presents to your ED with a referral letter from her GP requesting a blood transfusion for anaemia. She does not have any obvious source of bleeding other than a history of menorrhagia.

Her FBC is shown below.

Hb 74 g/L
MCV 75
WCC 7.4
Plt 380

Questions:

1. List 5 possible causes for her anaemia. (5 marks)

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. List three indications for a blood transfusion in this patient?

(3 marks)

Hb < 70 g/L
Symptomatic anaemia (eg SOB, Syncope, Heart failure)
Significant comorbidity (eg cardiac disease, malignancy)

The patient is deemed to require a blood transfusion and you have a discussion with her regarding consent for this. However, she refuses the transfusion due to concerns about the risks.

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

(8 marks)

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. List 2 alternative treatment options you could consider in this patient. (2 marks)

   Iron oral supplements
   Iron infusion
   Conservative Mx with consideration of EPO if no improvement in the next few weeks.

Passmark: 12/18