

South East Queensland Fellowship Written Mock Exam

2019.2

3rd October 2019

Book One

SAQ 1 to 9

With thanks to the FACEMs and the Emergency departments of

Sunshine Coast University Hospital

Caboolture Hospital

Redcliffe Hospital

The Prince Charles Hospital

Royal Brisbane & Women's Hospital

SAQ 1

Long question 18 Marks

A 24 day old exclusively breast fed male infant is brought to the emergency department by his concerned mother. Previously presented with jaundice at day 3 not requiring treatment, failed to attend follow up.

Vital signs

HR 122
BP: 68/42
RR 26
Weight 3250g

1. In the table below, outline two (2) maternal risk factors and two (2) neonatal risk factors for clinically significant hyperbilirubinaemia in any neonate (4 marks)

	Risk Factors (any 2 from each)
Maternal	1. Blood group (ABO incompatibility)
	2. Previously jaundiced child
	3. Poorly controlled Diabetes
	4. Family history of inherited haemolytic disorders (e.g.G6PDdeficiency, hereditary spherocytosis) ²³
Neonatal	1. Feeding – poor/inadequate supply
	2. Haematological factors such as bruising or polycythaemia or haemolytic disease
	3. Gastrointestinal – bowel obstruction, choledocal cyst, biliary atresia
	4. Other – prematurity, sepsis/infection

2. With regards the case, list 4 features on each of history and examination that will inform your diagnosis and management with justification for each (8 marks)

History	Justification
1. Accompanying symptoms – fever, unsettled	Rule out infection/sepsis as causal
2. Feeding history/weight gain	Rule out inadequate nutrition/hydration as contributor
3. Colour of stools/urine	Look for dark urine and pale/chalky stools. Differentiate conjugated/unconjugated
4. Family history of haemolytic conditions e.g G6PD	Potential etiology
5. Birth history	Prematurity, traumatic birth with cephalohaematoma, blood group as risk factors for jaundice
6. Neonatal screening	Consideration of congenital disorders e.g. hypothyroidism
Exam	
1. Vitals/well or unwell baby	Sepsis/infection
2. Growth parameters	FTT as indication of poor nutrition or underlying chronic disease
3. Dysmorphic features	Consideration of genetic disorders e.g. Alagilles
4. Abdominal masses	Choledocal cyst
5. Hepatosplenomegaly	Metabolic/storage disorder/viral hepatitis

3. Specify 4 initial investigations that should be undertaken – complete the following table (4 marks)

Investigation	Justification
1. Total bilirubin +conjugated bilirubin	Benign vs pathological, pre hepatic, post hepatic
2. FBC	To exclude a structural problem e.g.spherocytosis
3. DAT/Coombs	ABO incompatibility
4. Thyroid function tests	Rule out hypothyroidism
5. Liver function tests	Synthetic function of liver
6. Urine m/c/s	Rule out infection

4. The results of examination and investigations were reassuring for a benign cause. Identify the key elements in discharging this baby safely. (2 mark)

ANSWER: Explanation that this is most likely breast milk jaundice, reassurance, continue with breastfeeding, safety net with regards to development of concerning features including poor feeding, irritability, fever; consider social determinants – neonate – is mother well supported, are there any welfare concerns.

SAQ 2

12 Marks

An 85-Year-Old lady presents via ambulance after an episode of dizziness and fever at home. She had a fall in the garden earlier that day no injuries at the time but is now complaining of some mild lower back pain which is vague in location.

When the ambulance attended, she had a fever of 38.9 and was given 1g of paracetamol.

BP 125/80

HR 110

SaO₂ 99% on room air

GCS 14 (E4 V4 M6)

She has a past medical history of dementia, rheumatoid arthritis and hypertension.

1. Complete the table for issues for this patient and what should be done for each of these issues (4 marks)

Issue	Management
Age 85	Establish baseline level of function. Home circumstances, in-home care AHCD, ARP, ceiling of care, family
Fever	Septic screen including bloods, FBC, Chem 20, CRP BC, Urine, CXR, examine for skin source
Fall +/- Injury	Consider imaging? this as a cause of the fall? CT depending on clinical examination
Haemodynamics	Given Hx of HTN and HR and BP - likely sepsis - needs IVF bolus 250ml normal saline and recheck HR and BP
Rheumatoid Arthritis	? on immunocompromising agents
HTN	What agents on - what normal BP - this BP likely low for her
Dementia	Degree of dementia / ability to make health care decisions
Fever and back pain	? spinal infection

Clinically she has mild right sided flank pain. Otherwise her clinical examination including CNS exam is unremarkable.

Key investigations

Urine >1000 Leucocytes <10 epithelial cells and 50 red blood cells. 2+ bacteria.

FBC – Hb 104 WCC 15 Platelets 210

Chem 20 Na 137 K 4.9 Urea 23 Creatinine 236 eGFR 23

LFT unremarkable

Medications: aspirin, crestor, irbesartan and methotrexate.

The patient becomes confused (GCS 12 E3 V3 M6) with a SBP of 80.

2. List your management of the above situation (4 marks)

Treat infection - likely UTI , pylo +/- obstructed system - IV Anx - Ampicillin 2g Stat and 2g TDS thereafter and Gentamycin 4mg/kg (one off dose)

Manage haemodynamic's - Further fluid bolus's 500ml N saline and recheck BP and HR. Albumin

CT abdomen + Tl recons given back pain and fall (and fever) given Urine MCS (blood) and widely deranged renal function ? infected obstructed system / spinal infection / renal abscess

Establish quality of life and AHCD/ ceiling of care from the son

3. After a discussion with the son a decision is made to palliate. Complete the table of symptom control medications for the PRN side of the patient's drug chart (4 marks)

Symptoms	Medication
Pain	
Agitation	
Nausea/Vomiting	
Secretions	
Fever	

SAQ 3

12 Marks

Your department is in the process of revising its pathway for patients presenting to the ED with chest pain. You have been asked to help develop a pathway.

1. As per the National Heart Foundation of Australia & Cardiac Society of Australia and New Zealand guidelines, what are the high risk features of chest pain for Acute Coronary Syndrome (ACS), **not** including clear ST elevation on an ECG or an elevated Troponin? List 4 features. (4 marks)

- a) On-going/repetitive chest pain
Persistent St depression or T wave inversion in 2 contiguous leads
Haemodynamic compromise
Syncope
Sustained VT
Known poor LV systolic fxn
AMI/PCI/CABG in last 6 months

2. List 4 low risk criteria. (4 marks)

- b) Normal ECG
Normal Tnl
Age <40 y
Absence of known CAD
Atypical sx
Symptoms gone

3. Excluding ACS, list 8 causes of a raised serum Troponin by filling in the table below.(4 marks)

Cardiac causes	Non-cardiac causes
Aortic dissection	Acute SAH
Cardiac contusion	Renal failure
CCF	Sepsis
Cardiomyopathy	Hypoxia

Plus more if you're happy

SAQ 4

12 Marks

A highly distressed six year old male is brought in by his parents half an hour after a suspected snake bite. He is holding his very bruised fingers. Mum says he vomited twice en route to hospital.

1. What are your three immediate priorities? (3 marks)

ABC assessment (trauma/shock)

PIB

Analgesia

Bloods including FBE EUC Coag, CK

The following blood work returns:

INR 5.8	Cr 60 (normal)
APTT > 150	CK 500U/L
Fib < 0.6	Wcc 13 neuts 8
D-dimer > 10	Plt 400
	Hb 120

2. What primary abnormality does this demonstrate? (1 mark)

VICC

3. What types of snake can cause this type of envenomation? (2 marks)

Brown tiger taipan

4. List four different types of envenomation syndromes caused by Australian snakes, and one way in which antivenom should benefit each. (4 marks)

Clinical or biochemical envenomation feature	Antivenom benefit
VICC	Stops progression
Neurotoxicity	Will reverse if post-synaptic (Death adder) however will prevent progression if pre-synaptic (brown or tiger)
Myotoxicity	Stops progression, early administration likely to prevent
Anticoagulant coagulopathy	Rapidly reversed

5. How does dosing and administration of antivenom vary when children are being treated? (2 marks)
- AV dose still 1 vial
 - Smaller volumes: given in 100mL (up to 10mL/kg) of 0.9% n/Saline over 15-30 mins

SAQ 5

12 Marks

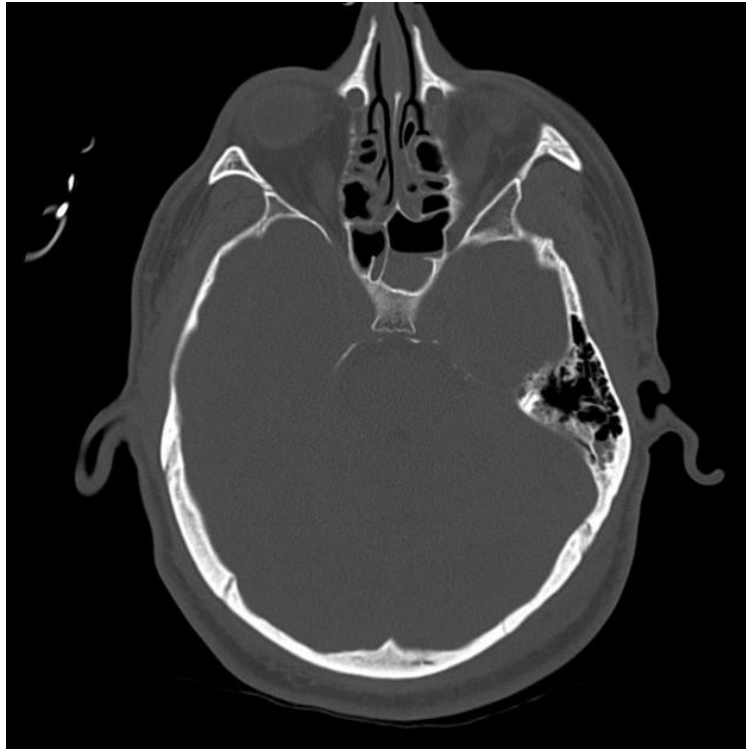
A 5 year old male presents to your regional Emergency Department 1 hour following a minor trauma. He has a history of severe Haemophilia A.

1. List four features on examination you would try to identify for this patient? (4 marks)
 - CNS/ head trauma
 - Deep muscle haematoma
 - Traumatic haemarthrosis
 - Intrabdominal- visceral injury
 - Other: Compartment syndrome/Epistaxis/ haematuria/ intraorbital bleeding

The patient has evidence of an isolated small haematoma to his occiput. He complains of a headache and has had two vomits. You decide to undertake neuroimaging.

A non-contrast CT Brain was performed. There are two (2) axial slices below.





2. From the imaging above, please state the diagnosis, with three (3) supporting CT findings. (4 marks)

- **Diagnosis: Contre-coup injury**
- **CT findings:**
 - **Right fronto-temporal cerebral contusion**
 - **Small associated SDH**
 - **Left parietal-occipital soft tissue haematoma**
 - **Underlying skull fracture (left parietal) without EDH**

3. Outline your key management priorities for this patient. (4 marks)

- **Factor VIIIa**
- **Analgesia (Paracetamol 15mg/kg, IN Fentanyl 1.5mcg/kg AVOID NSAIDS)**
- **Urgent discussion with Haematology**
- **Arrange retrieval to a Neurosurgical referral**

SAQ 6

12 Marks

A 35yr old man attends your ED with non-traumatic back pain for three days. He has thoracic and lumbar pain, radiating down his buttocks and the whole of both legs. He uses IV drugs and has had night sweats. His temperature is 38.5deg. He has urinary retention.

1. List the 'Red Flags' in *any patient* with back pain (4 marks)

Increasing age
Trauma
Steroid use
Cancer
Recent systemic infection
IV drug use
Fever
Pain worse at rest
Weight loss

2. List key investigations for this man with justification (2 Marks)

CRP - help confirm inflammatory process
(FBC likely too non-specific an answer)
Blood cultures - to guide antibiotic use
MRI - to make diagnosis and define extent/level
Need to have at least MRI or cultures
Could mention CT, but MRI much preferred
XR little benefit and a waste of a mark

3. What organisms are most associated with epidural abscess? (3 marks)

Staph aureus - key answer, could be MRSA or not
Coagulase neg Staph
B-haemolytic strep
Enterococci
Propionum/Cutibacterium acnes
E.Coli, Klebsiella, Pseudomonas

4. Investigation suggests epidural abscess in this man. What antibiotics would you give? (3 marks)

Needs urgent extended cover with three agents due to established abscess and neurology (see eTG). Just flucloxac not enough.

Flucloxacillin 2g IV 6hrly PLUS
Vancomycin IV 20mg/kg up to 25-30mg/kg if considered to be 'critically ill' - either dose accepted for this man
PLUS EITHER
Ceftriaxone 2g iv 12hrly or cefotaxime 2g IV 6hrly

SAQ 7

12 Marks

Your Director has requested that you write a protocol for the use of Extracorporeal Membrane Oxygenation (ECMO) in your tertiary children's emergency department.

1. List 5 steps you would undertake in preparing such a protocol.(5 marks)
 1. Check / review any existing practice - Benchmarking
 2. Create Working group with key stake holders – ED, ICU, Anesthesia, PICU, Retrieval, Paediatric cardiology, Paediatric cardiothoracic surgery, Paediatric respiratory
 3. Explore / adapt any local/regional protocol from comparable hospital
 4. Review current guidelines ACEM / JFICM / RANZCA
 5. Enlist / develop local champion/interest group – medical/nursing in ED to maintain adequate skill, regular education and inservice
2. List 3 inclusion criteria for initiation of ECMO in the paediatric ED.(3 marks)
 1. Failure of conventional life/organ support (cardiac and respiratory)
 2. Reversible medical condition
 3. Tempourising measure to facilitate corrective surgery / transplant
3. List 4 broad groups of conditions that might be suitable for ECMO therapy.(4 marks)
 1. Conventional treatment resistant Respiratory failure – example Life threatening asthma
 2. Conventional treatment resistant cardiac failure – severe myocarditis, intractable dysrhythmias
 3. Life threatening poisoning – calcium channel blockers, beta-blockers
 4. Environmental – life threatening hypothermia

SAQ 8

12 Marks

A 75 year old woman presents with increasing exertional dyspnoea over several weeks. A CXR shows a unilateral pleural effusion.

A diagnostic pleural tap is performed.

1. What tests should be done on the pleural aspirate fluid? (2 marks)

MC&S

Biochemistry - protein, LDH, plus others but these two important
Cytology

2. What are the causes of a pleural exudate? (4 marks)

Infective - pneumonia, tuberculosis

Inflammatory - rheumatoid arthritis, SLE, Dressler's syndrome

Malignancy

Pulmonary embolism

Benign asbestos related

Abdominal - Pancreatitis, intra abdominal abscess, oesophageal perforation, ascites e.g.

Meig's syndrome (benign ovarian tumour/ascites/pleural effusion)

3. What are the indications for a thoracocentesis of a pleural effusion *in the ED*? (3 marks)

respiratory compromise

haemodynamic instability

massive effusion with mediastinal shift

in some stable but symptomatic patients

4. What are the risk factors for re-expansion pulmonary oedema after thoracocentesis? (3 marks)

age < 30 years

lung collapse for > 7 days

> 3 L pleural fluid

Use of suction

Rapid drainage ie >1.5l/hr

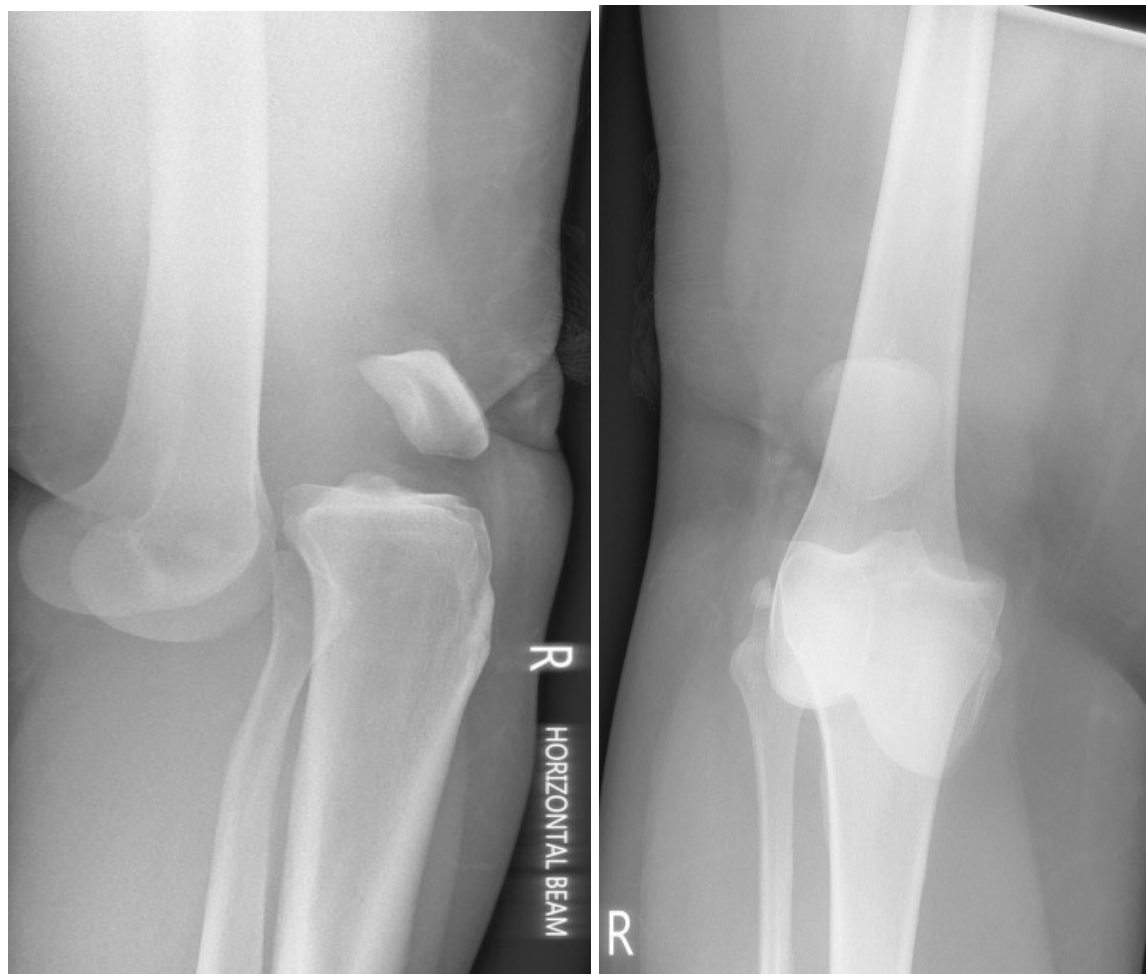
SAQ 9

12 Marks

A 56 year old female presents following a moderate speed MVA with isolated right knee pain. [Pass marks= 9/12](#)

1. List four (4) indications to X-Ray this patients knee following an acute injury. (4 marks)
 - [Ottawa knee rule](#)
 - [Age >55](#)
 - [Tenderness at the head of the fibula](#)
 - [Isolated tenderness of the patella](#)
 - [Inability to flex the knee to 90degrees](#)
 - [Inability to weight bear \(take 4 steps\) immediately and in the ED](#)
 - [Other:](#)
 - [Compound injury](#)
 - [Foreign body](#)
 - [Other answers may be appropriate](#)

An AP and lateral right knee X-Ray are performed. There are two (2) images below.



2. Based on the X-Ray, what is the diagnosis? (1 mark)

Right anterior dislocated knee

3. What structures are at risk of injury? (3 marks)

- Damage to the **popliteal artery** occurs in ~30%
- Nerve damage is reported in ~30%; common peroneal nerve more commonly injured than the tibial nerve
- Ligamentous injury (cruciate/ medial collateral)

Need to have popliteal artery damage to pass the subpart of this question

4. What are the priorities for the ongoing care of this patient? (4 marks)

- Analgesia (IV fentanyl 25-50mcg aliquots/ IV morphine 2.5-5mg repeated)
- Procedural sedation (ketamine/ propofol) to facilitate urgent reduction of the knee joint in DEM
- Neurovascular assessment post reduction
- **CT-Angiogram to ascertain vascular insult**
- Orthopaedic referral