Question 1 (18 marks)

A 35 year old man experiences a fall and sustains an isolated left wrist injury.

a. State two (2) abnormal findings in these x-rays. (2 marks)
   - # distal radius- transverse, impacted, dorsal angulation, extra articular
   - # scaphoid- waist

You decide to correct the abnormality with a local anaesthetic, manipulation and plaster.

b. List five (5) patient-related contraindications to the performance of this procedure. (5 marks)
   - Refusal to consent
   - Non compliant with procedure/ uncooperative pt
   - Compound injury- skin breach
   - Uncontrolled HT
   - Allergy to prilocaine
   - Failure to obtain IV access in dorsum hand
   - Raynaud’s syndrome
   - Buerger’s disease

c. List your preferred drug and dose for this procedure. (2 marks)
   Drug: prilocaine
   Dose: 0.5% 1 ml/kg = max 3 mg/kg (some up to 5mg/kg)

During the procedure the patient experiences a seizure. The patient is transferred to a resuscitation cubicle and is placed in the left lateral position.

d. List five (5) steps in the management of this toxicity, for this patient. (5 marks)
   - Check/ reinflate cuff
   - Stop drug
   - Bz
   - Intralipid
   - Haemodialysis

e. List four (4) potential errors that may have led to the seizure. (4 marks)
   - Cuff failure/leak
   - Failure to inflate cuff to sufficient BP
   - Incorrect prilocaine dose administration
   - Incorrect medication choice- eg lignocaine
   - Inadvertent incorrect medication
Question 2 (12 marks)

a. Regarding Rheumatic fever, list the five (5) major manifestations that are included in the modified Jones criteria. (5 marks)
   - Migratory arthritis (predominantly involving the large joints)
   - Carditis and valvulitis (eg, pancarditis)
   - Central nervous system involvement (eg, Sydenham chorea)
   - Erythema marginatum
   - Subcutaneous nodules

b. Regarding Rheumatic fever, list the four (4) minor manifestations that are included in the modified Jones criteria. (4 marks)
   - Arthralgia
   - Fever
   - Elevated acute phase reactants (erythrocyte sedimentation rate [ESR], C-reactive protein [CRP])
   - Prolonged PR interval

c. Regarding Rheumatic fever, list two (2) investigations that assist with definitive diagnosis. (2 marks)
   - ASOT titre- rise
   - Throat cultures for Group A strep

d. Regarding Rheumatic fever, list one (1) patient group in Australasia that is most likely to experience the disease. (1 mark)
   - Indigenous
Question 3 (12 marks)

A 35 year old woman presents with decreased vision in her right eye.

a. What is the diagnosis for her condition? (1 mark)
   • Retinal detachment

b. List two (2) different aetiologies that are associated with this condition. (2 marks)
   • Myopia
   • Cataract removal
   • Ocular trauma
   • Vitreous diseases
   • Fluoroquinolone use
   • Marfan’s syndrome

c. List two (2) features that you would expect the patient to report in the pattern of her visual loss. (2 marks)
   • Slow onset over hours
     o “like a shade over the eye”/ dark curtain/ shadow
   • Flashes or floaters

d. Other than retinal appearance, list the two (2) main features that you would expect on examination. (2 marks)
   • Visual field defect
   • ↓ VA

The patient is referred to the Ophthalmology team.

e. List three (3) management steps for this patient while in the emergency department. (3 marks)
   • Antiemetic (*not maxolon- ↑ IOP*)
   • Pad eye
   • Bed rest

f. Which two (2) factors have the major influence on prognosis in this condition? (2 marks)
   • % of retina involved
   • Time to definitive Rx (surgery)
Question 4 (12 marks)

a. List five (5) factors that improve adaptation to shift work. (5 marks)
   • Circadian principles in rostering- clockwise shift rotation
   • Light exposure in the workplace
   • Avoid caffeine/ nicotine/ alcohol near bedtime (each can be 1 mark)
   • Regular meals promotes sleep
   • Regular exercise promotes sleep

b. Regarding rostering, list seven (7) barriers to best practice rostering. (7 marks)
   • Inadequate staff numbers/ skill mix
   • Equal night shift allocation to all staff
   • Education sessions
   • Exam preparation
   • Requirement for management meetings
   • Historical precedent
   • Rosters unacceptable to staff
   • Award restrictions
   • Financial pressures inc. minimisation of overtime

This resource is produced for the use of University Hospital, Geelong Emergency staff for preparation for the Emergency Medicine Fellowship written exam. All care has been taken to ensure accurate and up to date content. Please contact me with any suggestions, concerns or questions.

Dr Tom Reade (Staff Specialist, University Hospital, Geelong Emergency Department)

Email: tomre@barwonhealth.org.au

November 2017
Question 5 (10 marks)

A 45 year old man presents with palpitations. He has no chest pain.

On examination: BP 140/60mm Hg RR 20 / min Oxygen saturation 98% on 6L via Hudson mask GCS 15

![ECG Image]

a. List five (5) abnormalities shown in this ECG. (5 marks)
   • Irregular
   • BC ~ 140 msec
   • Beat to beat variation in QRS duration (classically, amplitude should not vary)
   • Tachycardia ~ 300
   • LAD
   • Abnormal R wave progression in chest leads

b. State a unifying diagnosis for these ECG findings. (1 mark)
   • WPW AF

   .

c. List two (2) alternative, definitive treatment options for this patient. State one (1) justification for each choice. (4 marks)
   • DCR
     Justification: Urgent cardioversion is required, due to risk of deterioration to VF
     (despite lack of haemodynamic compromise)

   • Flecainide
     Justification: Flecainide is the only suitable drug choice- slows conduction in accessory pathways
Question 6 (13 marks)

An unknown 32 year old woman is involved in a single occupant high speed, rollover motor car collision. On arrival she is confused. Her observations are: BP 100/ 60 mmHg supine HR 135 /min RR 28 / min Oxygen saturation 92% on 6L via Hudson mask GCS 13 E4 V4 M5

a. List one (1) positive finding in this xray. (1 mark)
   • Advanced pregnancy

Primary survey reveals no abnormality including FAST scan negative. Secondary survey reveals no limb injury.

b. List three (3) radiological investigations that you would perform. State one (1) justification for each choice. (6 marks)

<table>
<thead>
<tr>
<th>Radiological investigation</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTB</td>
<td>• GCS with CHI</td>
</tr>
<tr>
<td>CXR</td>
<td>• RR 28 mechanism</td>
</tr>
<tr>
<td>CT C spine</td>
<td>• Decreased GCS</td>
</tr>
<tr>
<td></td>
<td>• Mechanism</td>
</tr>
</tbody>
</table>

c. List three (3) key pathology investigations that you would perform in this case. State one (1) justification for each choice. (6 marks)

<table>
<thead>
<tr>
<th>Pathological investigation</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBE</td>
<td>• Estimation of blood loss.</td>
</tr>
<tr>
<td></td>
<td>• May be anaemic assoc with pregnancy</td>
</tr>
<tr>
<td></td>
<td>• Plt count- ? pre-existing ↓ Plt</td>
</tr>
<tr>
<td>G+H</td>
<td>• Risk of auto immunisation</td>
</tr>
<tr>
<td>Kleihauer</td>
<td>• If Rh -ve</td>
</tr>
<tr>
<td>Blood alcohol</td>
<td>• Possible cause of ↓GCS</td>
</tr>
<tr>
<td>BSL</td>
<td>• Possible cause for collision</td>
</tr>
<tr>
<td>Police bloods</td>
<td>• Forensic documentation</td>
</tr>
<tr>
<td>Drug levels - inc paracetamol</td>
<td>• +/- other drugs if access</td>
</tr>
<tr>
<td></td>
<td>• if PHx Major Psychiatric illness parasuicides</td>
</tr>
<tr>
<td>Urine drug screen</td>
<td>• if PHx Major Psychiatric illness parasuicides</td>
</tr>
</tbody>
</table>
Question 7 (12 marks)

A 49 year old woman presents via ambulance to the Emergency Department. She has moderately severe thoracic back pain.

a. List five (5) indications for the performance of xrays of her thoracic spine. (5 marks)
   - Trauma
   - Presence of neurology
   - Known/ suspected malignancy
   - Other medical condition that may predispose to pathological fractures- eg Osteogenesis imperfecta
   - Associated fever (especially if immunocompromised/ IVDU)

Reference range

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Na</td>
<td>140</td>
<td>135-145</td>
</tr>
<tr>
<td>K</td>
<td>5.0</td>
<td>3.5-5.0</td>
</tr>
<tr>
<td>Urea</td>
<td>28.2</td>
<td>2.5-6.4</td>
</tr>
<tr>
<td>Creatinine</td>
<td>0.13</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Calcium</td>
<td>5.5</td>
<td>2.1-2.8</td>
</tr>
<tr>
<td>Albumin</td>
<td>30</td>
<td>35-50</td>
</tr>
<tr>
<td>AP</td>
<td>150</td>
<td>0-120</td>
</tr>
<tr>
<td>GGT</td>
<td>115</td>
<td>&lt;50</td>
</tr>
<tr>
<td>ALT</td>
<td>152</td>
<td>&lt;55</td>
</tr>
<tr>
<td>AST</td>
<td>125</td>
<td>0-50</td>
</tr>
<tr>
<td>Bili Total</td>
<td>15</td>
<td>0-19</td>
</tr>
<tr>
<td>T. Protein</td>
<td>61</td>
<td>60-82</td>
</tr>
</tbody>
</table>

b. Provide one (1) calculation to help you to interpret these results. (1 mark)
   - Calculation: Corrected Ca = 5.5 + (40- 30)x 2/100 = 5.5 + 0.2 = 5.7
     (IONIZED Ca++ (corrected) = measured Ca++ + (40 – serum albumin g/l) x 0.02)

c. State a likely unifying explanation for these results in this clinical context. Include three (3) points in your answer. (3 marks)
   - Significant hypercalcaemia
   - Renal impairment ↑ Ur:Cr suggestive of dehydration
   - Mild LFT abnormalities c/w mets
   - Possible dehydration a/w metastatic bony disease

d. List three (3) key steps in the specific treatment of her biochemical state. (3 marks)
   - Rehydration- NS (not Hartmanns as contains Ca)
   - Loop diuretics (avoid thiazide diuretics)- maintain high urine output
   - Bisphosphonates
   - Steroids
   - Not Oestrogen (only in post menopausal primary hyperparathyroidism)
Question 8 (11 marks)

A 32 year old man has been hit in the “groin” with a cricket ball the previous evening. He is complaining of a painful swollen scrotum.

a. List three (3) positive findings that you may anticipate on a formal ultrasound. List one (1) injury that each finding is associated with. For each of these findings, identify whether the finding is an indication for surgical exploration- yes/no. (9 marks)

<table>
<thead>
<tr>
<th>Ultrasound finding</th>
<th>Injury associated</th>
<th>Indication for exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parenchymal heterogeneity</td>
<td>Intratesticular haematoma</td>
<td>Yes</td>
</tr>
<tr>
<td>Loss of continuity of tunica albuginea</td>
<td>Tunica rupture</td>
<td>Yes</td>
</tr>
<tr>
<td>Haematocele</td>
<td>Testicular rupture</td>
<td>Yes</td>
</tr>
<tr>
<td>No flow to testicle</td>
<td>Testicular torsion</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The ultrasound is reported normal.

b. List your disposition. State one (1) justification for your choice. (2 marks)

Disposition: Admission under urology

Justification: A normal ultrasound should not prevent exploration of a grossly abnormal testicle on physical examination
Question 9 (18 marks)

A 65 year old man presents with a painful left lower leg.

a. You are concerned about the possibility of deep venous thrombosis.
   i. What is the role of age-adjusted cut-off DDimer level for this patient? State four (4) points in your answer. (4 marks)
      • Recent, large, retrospective study identified safety of age adjusted cut-offs (ADJUST-PE study- see below)
      • Age adjusted cut off can be used if non- high risk
      • Age in yrs x10- so adjusted cutoff is 650 ng/ml
      • A level below this cut-off (in low-intermediate risk) can safely exclude VTE

b. You suspect a diagnosis of superficial thrombophlebitis
   i. List four (4) indications for the performance of lower limb ultrasound for this patient (4 marks)
      • Involvement of upper 1/3 of thigh
      • Clinical evidence of extension (> 5 cm)
      • Lower extremity swelling > than expected from superficial phlebitis alone
      • Diagnosis uncertain

c. An ultrasound confirms superficial thrombophlebitis only.
   i. State three (3) indications for anticoagulation therapy for this patient. (3 marks)
      • Affected segment > 5 cm
      • Thrombosis close (<5cm) to saphenofemoral/ saphenopopliteal junction
      • Presence of major risk factor for ongoing thrombosis
   NB: difference between “Minor” and “major” superficial thrombophlebitis

d. An isolated below knee DVT is confirmed on ultrasound.
   i. State (2) indications for anticoagulation therapy for this patient. (2 marks)
   NB: propagation risks are much higher in patients with a continued risk for thrombosis
      • Leg in cylindrical immobilisation (plaster/fibreglass)
      • Prothrombotic haematological disorder

   ii. Other than warfarin, list two (2) anticoagulation options for this patient. (2 marks)
      • Clexane (enoxaparin)
      • Clexane for 3-5/7, followed by Dabigatran
      • Rivaroxaban
      • Apixaban

   iii. Assuming that there is no indication for anticoagulation therapy, list three (3) steps in your ongoing management of this patient. (3 marks)
      • Aspirin
      • Anti-embolic stocking
      • Repeat US at 3-7 days
      • Guidelines for urgent representation
Click on the image below to view the entire PDF (& print/save if necessary)