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**University Hospital, Geelong  
Emergency Medicine  
Trial Fellowship Exam  
Short Answer Questions (SAQ)  
Week 30**

**DIRECTIONS TO CANDIDATE**

1. Answer each question in the space provided in this question paper.
2. Do not write your name on this question paper.
3. Enter your examination number in the space below.
4. Cross out any errors completely.
5. Do not begin the exam until instructed to do so.
6. Do not take examination paper or materials from this room.
7. The booklet binder may be removed during the exam.

**QUESTION & ANSWER  
BOOKLET**

**Question 1 (18 marks)**

You are working in a Tertiary emergency department with obstetric and paediatric services on site. A 24 year-old multiparous woman who is 36 weeks pregnant presents to triage in suspected labour.

- a. Define the stages of labour. State the start and finish of each stage. (3 marks)

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The patient appears to be having frequent contractions and is in severe pain. She is transferred directly to the resuscitation room. On examination you note that the head is on view. The baby is successfully delivered within minutes. The cord is clamped and cut.

- b. List five (5) steps in the routine management of a well newborn infant. (5 marks)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Question 1 (continued)**

The placenta is still in situ. The Obstetric team is yet to arrive.

- c. List five (5) steps in the management of the mother over the next 10 minutes. (5 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

**Question 1 (continued)**

You successfully deliver the placenta. The patient continues to have on-going, heavy per vaginal bleeding. An assistant has notified the obstetric service who are still at least 10 minutes away.

- d. List five (5) steps in your management of the bleeding in the next 10 minutes. (5 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

**Question 2 (12 marks)**

A 65 year old woman presents with chest pain. You decide that she requires further investigation to investigate the possibility of acute coronary syndrome.

- a. List two (2) important pros and one important (1) con for the investigative options below for this patient. (12 marks)

| <b>Imaging option</b>               | <b>Pros<br/>(4 marks)</b> | <b>Con<br/>(2 marks)</b> |
|-------------------------------------|---------------------------|--------------------------|
| <b>Exercise stress test</b>         | 1.                        | 1.                       |
|                                     | 2.                        |                          |
| <b>Nuclear medicine stress test</b> | 1.                        | 1.                       |
|                                     | 2.                        |                          |

Continued over...

**Question 2 continued**

| <b>Imaging option</b>              | <b>Pros<br/>(4 marks)</b> | <b>Con<br/>(2 marks)</b> |
|------------------------------------|---------------------------|--------------------------|
| <b>Stress ECHO</b>                 | 1.                        | 1.                       |
|                                    | 2.                        |                          |
| <b>CT Coronary<br/>Angiography</b> | 1.                        | 1.                       |
|                                    | 2.                        |                          |

**Question 3 (12 marks)**

A 12 year old girl presents to the emergency department with a rash on her lower limbs.

**A photograph of her lower limbs is taken- see props booklet page 1.**

- a. Define petechia, purpura and ecchymosis. (4 marks)

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- b. Other than Idiopathic Thrombocytopaenia purpura, list four (4) LIKELY differential diagnoses for this rash for this patient. (4 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

### Question 3 (continued)

After complete assessment, you suspect a diagnosis of Idiopathic Thrombocytopenia Purpura.

- c. What is the prognosis for this patient with no active treatment? (1 mark)

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You decide to commence active treatment.

- d. What is your preferred initial treatment for this patient? (1 mark)

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- e. List one (1) additional treatment option for this patient at presentation. (1 mark)

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- f. Under what circumstances would you consider this treatment at presentation? (1 mark)

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**Question 4 (12 marks)**

A 34 year old man presents with upper abdominal pain.

**Liver function tests are taken- refer to the props booklet page 2.**

a. List five (5) LIKELY differential diagnoses. (5 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

**Question 4 (continued)**

b. List three (3) features of these investigations that support established cirrhosis. (3 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

c. In addition to information given, list four (4) other features that would indicate severe hepatic disease for this patient. (4 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

**Question 5 (12 marks)**

A 35 year old man is brought in to your emergency department following a high speed motor bike accident.

**An Xray of his right knee is taken- refer to the props booklet- page 3.**

a. State three (3) abnormal findings shown in this xray. (3 marks)

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

b. List four (4) local, non- bony structures that are LIKELY to be injured in association with this injury. (4 marks).

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_

**Question 5 (continued)**

c. List five (5) possible complications of this injury after the first 1 week. (5 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

**Question 6 (12 marks)**

A 15 year-old boy presents to your emergency department with his parents, with a painful right testicle for the last 6 hours.

- a. List four (4) key clinical features that may help to distinguish torsion from epididymitis in this patient. (4 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

- b. List two (2) pros for the use of Ultrasound in this patient. (2 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

**Question 6 (continued)**

c. List two (2) cons for the use of Ultrasound in this patient. (2 marks)

1. \_\_\_\_\_
2. \_\_\_\_\_

An ultrasound is performed within 1 hour and confirms a right testicle with no flow.

d. List four (4) pieces of information that you would communicate to the patient and his parents. (4 marks)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Question 7 (12 marks)**

A 28 year old man is brought into your emergency department after being stabbed whilst at a night club. He is brought in by ambulance after having been intubated for respiratory distress.

**A photo is taken- see the props booklet- page 4.**

Soon after this photograph, is taken he rapidly deteriorates and is found to have pulseless electrical activity.

a. List six (6) LIKELY causes for his haemodynamic deterioration. (6 marks)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

**Question 7 (continued)**

Despite appropriate treatment, the patient dies shortly after in the department.

b. List six (6) steps in your management of the situation in the next 2 hours. (6 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_



### Question 8 (14 marks)

Complete the table below, by listing one (1) expected clinical effect of the following mild or severe inhalational exposures. (6 marks)

| Inhalational agent            | Clinical effects<br>(6 marks) |
|-------------------------------|-------------------------------|
| <b>Ammonia<br/>(2 marks)</b>  | Mild:                         |
|                               | Severe:                       |
| <b>Chlorine<br/>(2 marks)</b> | Mild:                         |
|                               | Severe:                       |
| <b>Phosgene<br/>(2 marks)</b> | Mild:                         |
|                               | Severe:                       |

### Question 8 (continued)

- a. Complete the table below, stating the syndrome and one (1) clinical effect seen at each level of increasing ionising radiation. (8 marks)

| <b>Radiation level</b>  | <b>Syndrome<br/>(4 marks)</b> | <b>Clinical effect<br/>(4 marks)</b> |
|---|-------------------------------|--------------------------------------|
| <b>Low exposure<br/>(2-10 Gray)</b><br><br><b>(2 marks)</b>       | 1.                            | 1.                                   |
| <b>Medium exposure<br/>(10-15 Gray)</b><br><br><b>(2 marks)</b>   | 1.                            | 1.                                   |
| <b>High exposure<br/>(15-30 Gray)</b><br><br><b>(2 marks)</b>     | 1.                            | 1.                                   |
| <b>Extreme exposure<br/>(&gt;30 Gray)</b><br><br><b>(2 marks)</b> | 1.                            | 1.                                   |

**Question 9 (18 marks)**

A 78 year old man is brought to your emergency department after a syncopal event at home. His only past medical history is of congestive cardiac failure, and he is unable to remember his medications.

**An ECG is taken- see props booklet- page 5.**

a. State five (5) abnormal findings in this ECG. (5 marks)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Question 9 (continued)**

- b. List four (4) different medications (each to be from a different pharmacological class) that may be causative agents for these findings in this patient. (4 marks)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

**Question 9 (continued)**

It is confirmed that the patient has been non-compliant with his medications for the last 3 months. His venous blood gases show normal electrolytes.

His vital signs are:

|             |       |      |
|-------------|-------|------|
| BP          | 60/55 | mmHg |
| RR          | 26    | /min |
| Sats        | 97%   | RA   |
| Temperature | 36.2  | °C   |

- c. List three (3) treatment options that may improve this patients' haemodynamic state. Provide one (1) important pro and one (1) important con for each of these methods in this patient. (9 marks)

|           | <b>Treatment option<br/>(3 marks)</b> | <b>Pro<br/>(3 marks)</b> | <b>Con<br/>(3 marks)</b> |
|-----------|---------------------------------------|--------------------------|--------------------------|
| <b>1.</b> |                                       | 1.                       | 1.                       |
| <b>2.</b> |                                       | 1.                       | 1.                       |
| <b>3.</b> |                                       | 1.                       | 1.                       |

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**University Hospital, Geelong  
Emergency Medicine  
Trial Fellowship Exam  
Short Answer Questions (SAQ)  
Week 30**

**PROP BOOKLET**

Question 3



## Question 4

### Reference range

|                                     |   |                  |
|-------------------------------------|---|------------------|
| <b>Total bilirubin</b>              | <b>125 <math>\mu\text{mol/ L}</math></b>    | <b>0- 20</b>     |
| <b>Protein</b>                      | <b>65 g/L</b>                               | <b>60- 80</b>    |
| <b>Albumin</b>                      | <b>37 g/L</b>                               | <b>33- 47</b>    |
| <b>Alkaline phosphatase</b>         | <b>118 U/L</b>                              | <b>30- 100</b>   |
| <b><math>\gamma\text{GT}</math></b> | <b>450 U/L</b>                              | <b>0-50</b>      |
| <b>AST</b>                          | <b>2854 U/L</b>                             | <b>0- 35</b>     |
| <b>ALT</b>                          | <b>2785 U/L</b>                             | <b>0- 40</b>     |
| <b>LDH</b>                          | <b>205 U/L</b>                              | <b>120- 250</b>  |
| <br>                                |   |                  |
| <b>Hb</b>                           | <b>125 g/L</b>                              | <b>115- 165</b>  |
| <b>WCC</b>                          | <b><math>5 \times 10^9/\text{l}</math></b>  | <b>4.0- 11.0</b> |
| <b>Plt</b>                          | <b><math>95 \times 10^9/\text{l}</math></b> | <b>150- 400</b>  |
| <br>                                |   |                  |
| <b>INR</b>                          | <b>1.8</b>                                  |                  |



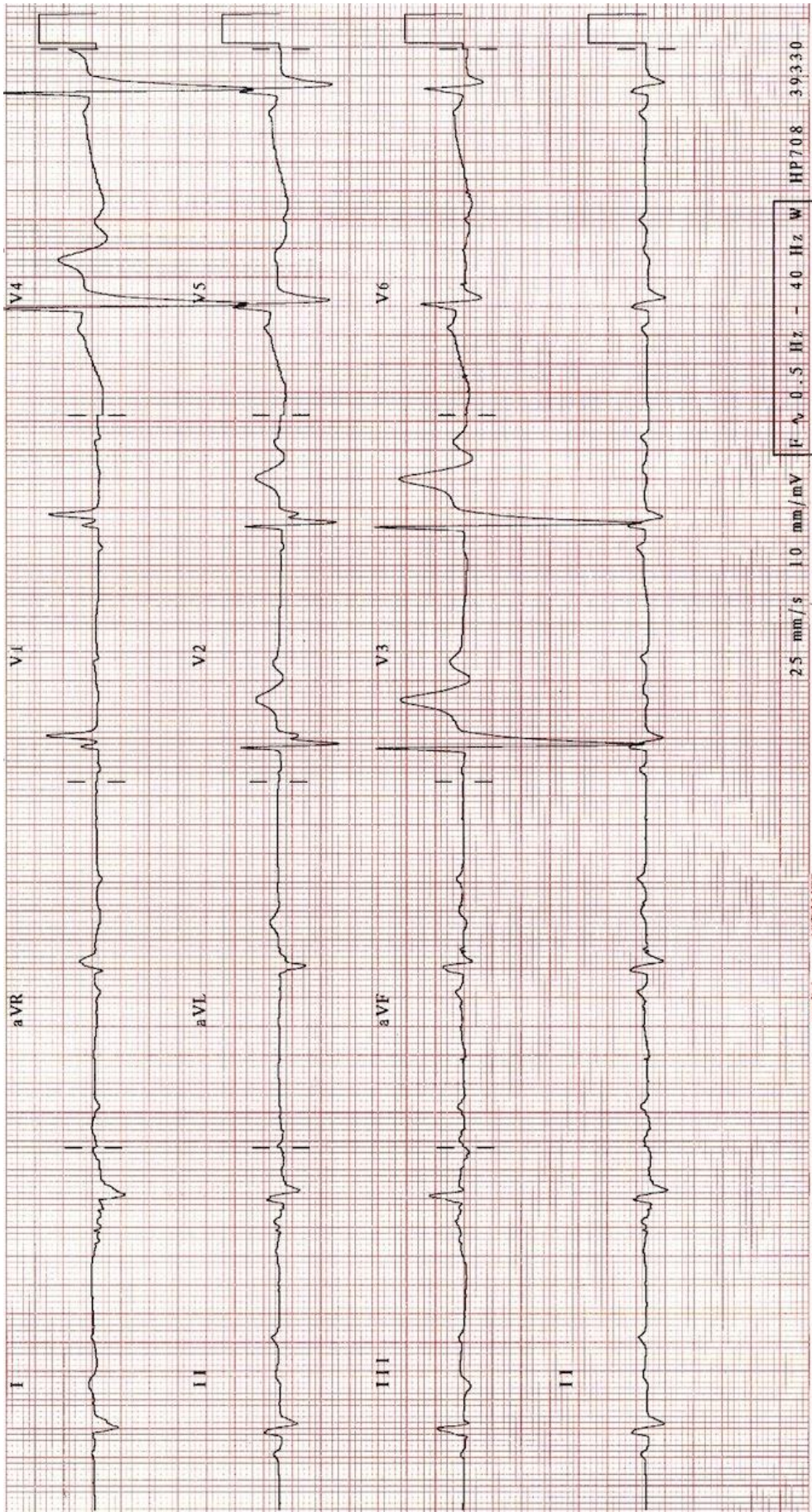
Question 5



Question 7



# Question 9



"List" = 1-3 words

"State" = short statement/ phrase/ clause

UNIVERSITY HOSPITAL, GEELONG  
FELLOWSHIP WRITTEN EXAMINATION

WEEK 30– TRIAL SHORT ANSWER QUESTIONS Suggested answers

**PLEASE LET TOM KNOW OF ANY ERRORS/ OTHER OPTIONS FOR ANSWERS**

**Please do not simply change this document - it is not the master copy !**

**Question 1 (18 marks)**

You are working in a Tertiary emergency department with obstetric and paediatric services on site. A 24 year-old multiparous woman who is 36 weeks pregnant presents to triage in suspected labour.

- a. Define the stages of labour. State the start and finish of each stage. (3 marks)
- **First stage- From the onset of regular contractions to full dilatation.**
  - **Second- From full dilation to delivery of the baby.**
  - **Third- From delivery of baby to delivery of placenta.**

The patient appears to be having frequent contractions and is in severe pain. She is transferred directly to the resuscitation room. On examination you note that the head is on view. The baby is successfully delivered within minutes. The cord is clamped and cut.

- b. List five (5) steps in the routine management of a well newborn infant. (5 marks)
- **Dry**
  - **Warm- Nurse in heated cot**
  - **Anticipate a cry- Rub/ Stimulate if required (BVM and oxygen usually not required)**
  - **Wrap in swaddle cloth**
  - **Give to mother**

The placenta is still in situ. The Obstetric team is yet to arrive.

- c. List five (5) steps in the management of the mother over the next 10 minutes. (5 marks)
- **Check no twin**
  - **Administer syntocinon- 10 Units IV or IM**
  - **Delivery of placenta- Controlled cord traction -Inspect for complete placenta**
  - **Uterine massage- After placenta delivered to ensure uterus contracted**
  - **Observe for further PV loss- seek and treat perineal tears**

You successfully deliver the placenta. The patient continues to have on-going, heavy per vaginal bleeding. An assistant has notified the obstetric service who are still at least 10 minutes away.

- d. List five (5) steps in your management of the bleeding in the next 10 minutes. (5 marks)
- **Direct pressure if site of bleeding identified eg. episiotomy site**
  - **Uterine massage/IDC**
  - **Give further syntocinon- Must be IV 40 IU in 1 litre N saline infusion (order of 10 U/hr depending on rate of bleeding)**
  - **Prepare/ activate protocol massive transfusion - Ensure large bore IV access X 2**
  - **Begin fluid resuscitation- early use of blood products**
  - **Vaginal packing**
  - **Bimanual uterine compression**
  - **Notify theatre- Notify anaesthetics**

**Click on the image below to view the entire PDF (& print/save if necessary)**



## Question 2 (12 marks)

A 65 year old woman presents with chest pain. You decide that she requires further investigation to investigate the possibility of acute coronary syndrome.

- a. List two (2) important pros and one important (1) cons for the investigative options below for this patient. (12 marks)

*NB: Avoid repeating the same point as a pro for one technique and a con for an alternative technique*

| Imaging option               | Pros   | Cons  |
|------------------------------|--|---|
| Exercise stress test         | <ul style="list-style-type: none"> <li>• No contrast</li> <li>• High sensitivity in combination with low risk factors</li> <li>• If +ve useful in confirming IHD (PPV 40%)</li> <li>• NPV 95% if serial trops -ve</li> </ul>   | <ul style="list-style-type: none"> <li>• Inability to complete exercise-fitness/ medical problems (eg OA)</li> <li>• False +ve- CP</li> <li>• Poor sensitivity when used alone (not useful to exclude IHD)</li> <li>• Poor sensitivity 70% and specificity 75% in ED pts with -ve trops</li> <li>• CI: Recent MI, CCF, AF, LBBB</li> <li>• Adverse event rate 1:2500</li> </ul> |
| Nuclear medicine stress test | <ul style="list-style-type: none"> <li>• No requirement to exercise</li> <li>• Delineates anatomical distribution of ischaemia</li> <li>• Functional info</li> <li>• EF estimation most accurate (EF estimation : GBPS= NM study&gt; Echo &gt; angiography)</li> <li>• Hot- almost 100% NPV for IHD</li> </ul> <p>NB: sensitivity and specificity varies depending on Hot vs cold vs thallium vs sestamibi</p> | <ul style="list-style-type: none"> <li>• Availability</li> <li>• Storage/ administration of isotope</li> <li>• False +ves dt breast &amp; diaphragmatic artefact</li> </ul>   |
| Stress ECHO                  | <ul style="list-style-type: none"> <li>• May detect LVH/ valve/ EF</li> <li>• Higher Sens 86% &amp; spec 81%</li> <li>• No requirement to exercise</li> </ul>  | <ul style="list-style-type: none"> <li>• Availability- specific expertise required</li> <li>• Body habitus</li> </ul>   |
| CT Coronary angiography      | <ul style="list-style-type: none"> <li>• Sensitivity 85% specificity 90%</li> <li>• Non invasive</li> <li>• May detect alternative Dx for chest pain eg PE (adequate rule out PE study needs extra contrast), TAD</li> <li>• No exercise required</li> <li>• ↓ admission rate/ LOS</li> </ul>  | <ul style="list-style-type: none"> <li>• Radiation 4-20 mSv</li> <li>• Need to be able to hold breath for 15 sec</li> <li>• BBlockers often required to ↓HR</li> <li>• Accuracy ↓ if HR &gt; 70</li> <li>• Poor image quality in AF, CCF</li> </ul>   |

### Question 3 (12 marks)

A 12 year old girl presents to the emergency department with a rash on her lower limbs.



- a. Define petechia, purpura and ecchymosis. (4 marks)
- **Flat, round erythematous, non blanching spots caused by intradermal haemorrhage**
  - **Petechial <2 mm**
  - **Purpura 2-10 mm**
  - **Ecchymosis > 10 mm**
- b. Other than Idiopathic Thrombocytopaenia purpura, list four (4) **LIKELY** differential diagnoses for this rash for this patient. (4 marks)
- **Acute meningococcal sepsis**
  - **Overwhelming staph sepsis**
  - **Overwhelming pneumococcal sepsis**
  - **Toxic shock syndrome**
  - **EBV**
  - **Enterovirus**
  - **Local pressure/ trauma**
  - **Vasculitis- HSP etc**
  - **Snake bite**
  - **Less likely:**
    - **Scarlet fever**
    - **Rickettsial typhus**
    - **Measles**
    - **Rubella**
    - **Dengue**
    - **African fevers-Ebola**

After complete assessment, you suspect a diagnosis of Idiopathic Thrombocytopenia Purpura.

- c. What is the prognosis for this patient with no active treatment? (1 mark)
- **Good - full recovery likely in children** (> 50% < 4/52, > 80% < 6/12)
- NB: Rx indicated in children if Plt < 50. Adults usually require Rx at time of presentation.*

You decide to commence active treatment.

- d. What is your preferred initial treatment for this patient? (1 mark)
- **Prednisolone 1mg/kg** (*effective in 50-75%. ~50% of responders require maintenance steroids*)
- e. List one (1) additional treatment option for this patient at presentation. (1 mark)
- **Anti-D immunoglobulin**
- f. Under what circumstances would you consider this treatment at presentation? (1 mark)
- **Rh +ve children with plt < 30**

*NB: Chronic ITP resistant to steroids- options are: Thrombopoietin analogues, monoclonal Abs (Rituximab), splenectomy*

## Question 4 (12 marks)

A 34 year old man presents with upper abdominal pain.

|                      |      |         | Reference range |
|----------------------|------|---------|-----------------|
| Total bilirubin      | 125  | μmol/ L | 0- 20           |
| Protein              | 65   | g/L     | 60- 80          |
| Albumin              | 37   | g/L     | 33- 47          |
| Alkaline phosphatase | 118  | U/L     | 30- 100         |
| γGT                  | 450  | U/L     | 0-50            |
| AST                  | 2854 | U/L     | 0- 35           |
| ALT                  | 2785 | U/L     | 0- 40           |
| LDH                  | 205  | U/L     | 120- 250        |

- a. List five (5) LIKELY differential diagnoses. (5 marks)
- **Viral hepatitis**
  - **Alcoholic hepatitis**
  - **Paracetamol OD**
  - **Drug induced hepatitis**
  - **Wilson's disease**
  - **Haemochromatosis**
  - **Mushroom ingestion**
- b. List three (3) features of these investigations that support established cirrhosis. (3 marks)
- **AST/ALT ratio > 1 (85% specific, 50% sensitive)**
  - **Thrombocytopenia**
  - **↑ INR**
- c. In addition to information given, list four (4) other features that would indicate severe hepatic disease for this patient. (4 marks)
- **Ascites**
  - **Portal hypertension**
  - **Encephalopathy**
  - **Hepatorenal syndrome**

*Childs- Pugh classification*

| Parameter                                       | Points assigned |                 |            |
|---|-----------------|-----------------|------------|
|   | 1               | 2               | 3          |
| Ascites   | Absent          | Slight          | Moderate   |
| Hepatic encephalopathy                          | None            | Grade 1-2       | Grade 3-4  |
| Bilirubin micromol/L (mg/dL)                    | <34.2 (<2)      | 34.2-51.3 (2-3) | >51.3 (>3) |
| Albumin g/L (g/dL)                              | >35 (>3.5)      | 28-35 (2.8-3.5) | <28 (<2.8) |
| Prothrombin time<br>Seconds over control<br>INR | <4<br><1.7      | 4-6<br>1.7-2.3  | >6<br>>2.3 |

CPT classification:

- Child A: score 5-6 (well compensated);
- Child B: score 7-9 (significant functional compromise);
- Child C: score 10-15 (decompensated)



## Question 5 (12 marks)

A 35 year old man is brought in to your emergency department following a high speed motor bike accident.

- a. State three (3) abnormal findings shown in this xray. (3 marks)
  - **Anterior dislocation of the knee**
  - **5x 3 mm well demarcated bony fragment immediately inferior to the femur ( likely sesamoid bone ? tibial spine # )**
  - **Haemarthrosis**
  
- b. List four (4) local, non- bony structures that are LIKELY to be injured in association with this injury. (4 marks).
  - **Popliteal artery injury (avulsion/ complete disruption) (*highly likely*)**
  - **Peroneal nerve injury (*highly likely*)**
  - **ACL**
  - **PCL**
  - **MCL**
  - **LCL**
  
- c. List five (5) possible complications of this injury after the first 1 week. (5 marks)
  - **Compartment syndrome**
  - **DVT**
  - **Graft failure**
  - **Infection**
  - **Incisional dehiscence**
  - **+/- repeat Sx procedures**
  - **prolonged immobilisation may delay recovery/ rehabilitation from other injuries**
  - **Leg amputation 2° to vascular compromise**
  - **Knee instability**
  - **Knee pain & stiffness (arthritis)**
  - **Loss of employment/ financial issues**
  - **Restriction in enjoyable/ leisure activities**
  - **Depression**

## Question 6 (12 marks)

A 15 year-old boy presents to your emergency department with his parents, with a painful right testicle for the last 6 hours.

- a. List four (4) key clinical features that may help to distinguish torsion from epididymitis in this patient. (4 marks)
- **Pain- sudden onset, unilateral, severe, constant**
  - **Hx trauma**
  - **Urinary symptoms usually absent in torsion**
  - **Examination:**
    - **High riding testis**
    - **Transverse lie**
    - **Absent cremasteric reflex**
    - **Able to be detorted**
    - **In epididymitis- epididymis more tender than testis**
- b. List two (2) pros for the use of Ultrasound in this patient. (2 marks)
- **May be diagnostic**
  - **Dx alternative Dx- torsion of cyst/ orchitis**
  - **Demonstrate testicular blood flow**
  - **Non invasive**
- c. List two (2) cons for the use of Ultrasound in this patient. (2 marks)
- **Can't exclude torsion (clinical Dx)/ sensitivity not sufficient for Dx in children**
  - **Delays definitive exploration in time critical problem**
  - **False -ve if incomplete torsion or resolved torsion (hyperaemia)- both need Sx**
  - **Operator dependent**

An ultrasound is performed within 1 hour and confirms a right testicle with no flow.

- d. List four (4) pieces of information that you would communicate to the patient and his parents. (4 marks)
- **Provide Dx/ US findings**
  - **Need for urgent Sx- time dependant**
  - **Timeframe of planned review by surgical team**
  - **Prognosis- guarded- possibly non salvageable- more information from surgical team**
  - **Need to be present for consent (MUST be performed by Sx)**
  - **Further analgesia as required**

## Question 7 (12 marks)

A 28 year old man is brought into your emergency department after being stabbed whilst at a night club. He is brought in by ambulance after having been intubated for respiratory distress.



Soon after this photograph, is taken he rapidly deteriorates and is found to have pulseless electrical activity.

- a. List six (6) LIKELY causes for his haemodynamic deterioration. (6 marks)

Most likely:

- Tension pneumothorax
- Tension (massive ) haemothorax
- Cardiac tamponade

Less likely:

- Hypovolaemia- secondary to severe haemorrhage +/- anaesthetic drugs
- Hypoxia 2° to major tracheo bronchial laceration
- Cardiac laceration- atrium, ventricle *patient probably would have died earlier)*
- Aortic dissection ( *patient probably would have died earlier)*
- Gas embolism from lung laceration → heart

Despite appropriate treatment, the patient dies shortly after in the department.

- b. List six (6) steps in your management of the situation in the next 2 hours. (6 marks)

- Notify police
- Notify NOK
- Notify coroner
- Coronial deposition- leave all lines etc (death certificate cannot be completed)
- Document- examination, course and Rx provided

- Document death
- Debrief staff

## Question 8 (12 marks)

- a. Complete the table below, stating the site of irritation and expected mild and severe clinical effects of the following inhalational exposures. (6 marks)

*NB: These three gases are considered the archetypal upper/ lower/ terminal airway irritants (alphabetically upper to lower)*

| Inhalational agent           | Site of irritation<br>(3 marks) | Clinical effects (1 mild, 1 severe for each)<br>(6 marks)  |
|------------------------------|---------------------------------|--|
| <b>Ammonia</b><br>(2 marks)  | <b>Upper</b>                    | <b>Mild:</b> <ul style="list-style-type: none"> <li>• Skin inflammation</li> <li>• Conjunctivitis</li> <li>• Cough</li> <li>• Burning sensation in throat</li> <li>• Headache</li> <li>• N &amp; V</li> </ul> <b>Severe:</b><br><i>Exposure in confined space</i> <ul style="list-style-type: none"> <li>• SOB</li> <li>• Wheeze</li> <li>• Stridor/ laryngospasm</li> <li>• Difficulty speaking</li> <li>• Partial/ full thickness skin burns</li> <li>• APO</li> </ul> |
| <b>Chlorine</b><br>(2 marks) | <b>Lower</b>                    | <b>Mild:</b> <ul style="list-style-type: none"> <li>• Lacrimation</li> <li>• Rhinorrhoea</li> <li>• Cough</li> <li>• Headache</li> </ul> <b>Severe:</b> <ul style="list-style-type: none"> <li>• Rapid onset of symptoms</li> <li>• Purulent sputum</li> <li>• APO (early)</li> </ul>  |
| <b>Phosgene</b><br>(2 marks) | <b>Terminal airways</b>         | <b>Mild:</b> <ul style="list-style-type: none"> <li>• Choking</li> <li>• Cough</li> <li>• Lacrimation</li> <li>• Headache</li> <li>• N &amp; V</li> </ul> <b>Severe:</b> <ul style="list-style-type: none"> <li>• Latent period of min-hrs until symptoms</li> <li>• Chest tightness</li> <li>• SOB</li> <li>• Haemoptysis</li> <li>• APO</li> </ul>   |

Complete the table below, stating the increasing clinical effect of ionising radiation. (8 marks)

| Radiation level                        | Syndrome (4 marks)                               | Clinical effects (4 marks)  |
|--|--|---|
| Low exposure (2-10 Gray) (2 marks)     | Haemopoetic syndrome (effects dt BM suppression) | <i>Symptomatic by 3/52</i> <ul style="list-style-type: none"> <li>• WCC- progressive ↓</li> <li>• Fatigue</li> <li>• Bleeding</li> <li>• Infections</li> <li>• Ulceration</li> <li>• Aplastic anaemia</li> </ul>  |
| Medium exposure (10-15 Gray) (2 marks) | GIT syndrome                                     | <i>Precedes BM suppression (ie &lt; 2/52)</i> <ul style="list-style-type: none"> <li>• Severe vomiting</li> <li>• Bloody Diarrhoea</li> <li>• Ileus</li> <li>• Septicaemia</li> <li>• CV collapse</li> <li>• ARF</li> <li>• Pneumonitis</li> <li>• Acute liver failure</li> </ul> |
| High exposure (15-30 Gray) (2 marks)   | Vascular syndrome                                | <i>Capillary dilatation and leakiness</i> <ul style="list-style-type: none"> <li>• Cerebral oedema</li> <li>• Death &lt; 2/52</li> </ul>  |
| Extreme exposure (>30 Gray) (2 marks)  | Cerebral syndrome                                | <i>Immediate</i> <ul style="list-style-type: none"> <li>• N &amp; V</li> <li>• Diarrhoea</li> <li>• CV collapse</li> <li>• Confusion</li> <li>• Ataxia</li> <li>• Convulsion</li> <li>• Coma</li> <li>• Death &lt; 48/24</li> </ul>   |

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.

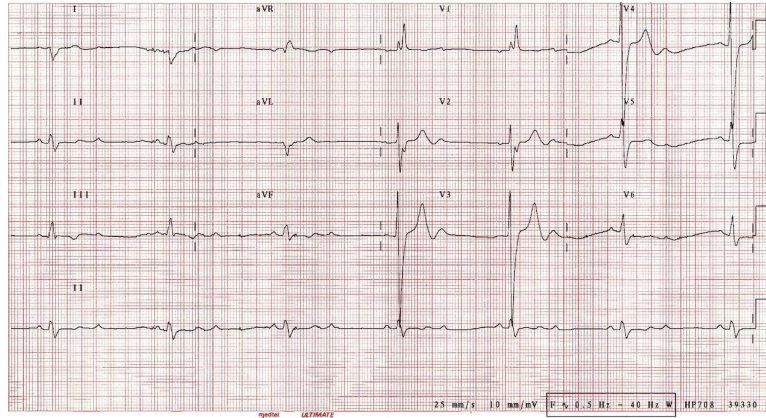
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## Question 9 (18 marks)

A 78 year old man is brought to your emergency department after being found on the floor of his home. His only past medical history is of congestive cardiac failure, and he is unable to remember his medications.



- a. State five (5) abnormal findings in this ECG. (5 marks)
- **SB ~ 40**
  - **RAD**
  - **RBBB**
  - **Mobitz type II 2 degree HB**
  - **Peaked T waves**
- b. List four (4) different medications (each to be from a different pharmacological class) that may be causative agents for these findings in this patient. (4 marks)
- **Digoxin**
  - **CCB- Verapamil**
  - **Amiodarone**
  - **βBlocker- Metoprolol**

It is confirmed that the patient has been non-compliant with his medications for the last 3 months. His venous blood gases show normal electrolytes. His vital signs are: BP 60/55 mmHg RR 26 / min Sats 97% RA Temp 36.2 °C

- c. List three (3) treatment options that may improve this patient's haemodynamic state. Provide one (1) pro and one (1) con for each of these methods in this patient. (9 marks)

*NB: Avoid repeating the same point as a pro for one technique and a con for an alternative technique*

| Treatment option      | Pro  | Con  |
|-----------------------|--|--|
| Fluids                | <ul style="list-style-type: none"> <li>• May be dehydrated/ ARF (NB K normal)</li> </ul>   | <ul style="list-style-type: none"> <li>• APO</li> </ul>  |
| Atropine              | <ul style="list-style-type: none"> <li>• Titratable bolus</li> </ul>   | <ul style="list-style-type: none"> <li>• Limited benefit</li> <li>• Not used as infusion</li> <li>• May see paradoxical brady</li> <li>• Tachycardia may worsen ischaemia</li> </ul> |
| Adrenaline            | <ul style="list-style-type: none"> <li>• Titratable infusion</li> </ul>  | <ul style="list-style-type: none"> <li>• VC at site infusion</li> <li>• Central access preferred</li> </ul>  |
| Transcutaneous pacing | <ul style="list-style-type: none"> <li>• Effective in high degree block</li> <li>• 1<sup>st</sup> line if rapidly available</li> </ul> | <ul style="list-style-type: none"> <li>• Time to set up</li> <li>• Pain</li> <li>• Failure</li> </ul>  |
| Transvenous pacing    | <ul style="list-style-type: none"> <li>• Effective in high degree block</li> </ul>   | <ul style="list-style-type: none"> <li>• Time to set up</li> <li>• Invasive</li> <li>• Requires Cardiology expertise</li> </ul>  |
| Isoprenaline          | <ul style="list-style-type: none"> <li>• Titratable infusion</li> </ul>  | <ul style="list-style-type: none"> <li>• Steal- worsening ischaemia</li> </ul>   |
| Dobutamine            | <ul style="list-style-type: none"> <li>• Pure β agonist</li> <li>• Cardiac effect only- no VC at site infusion</li> </ul>              | <ul style="list-style-type: none"> <li>• Vasodilation</li> <li>• Hypotension</li> </ul>  |

