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.


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)

a. What is the role of serum procalcitonin levels in the diagnosis of meningitis? State three (3) points in your answer. (3 marks)

1. ______________________________________________________________

2. ______________________________________________________________

3. ______________________________________________________________
**Question 1 (continued)**

A 25 year old presents with a severe headache.

b. Complete the reference table below regarding expected CSF findings. (provide absolute values where clinically important, state increased or decreased in other cases) (10 marks)

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Bacterial meningitis</th>
<th>Viral meningitis</th>
<th>Fungal (eg Cryptococcal)</th>
<th>Sub arachnoid Haemorrhage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening pressure</strong></td>
<td>50-200 mmH20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>Clear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WCC</strong></td>
<td>0-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RBC</strong></td>
<td>0-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CSF Protein</strong></td>
<td>0.2-0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CSF Glucose</strong></td>
<td>60-80% serum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
c. List five (5) contraindications to performing a lumbar puncture prior to a CT Brain in the setting of suspected meningitis. (5 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

4. __________________________________________________________________________

5. __________________________________________________________________________
Question 2 (12 marks)

A 2 year old girl presents with a suspected febrile convolution.

a. List six (6) criteria that must be met for the patient to be safely discharged. (6 marks)

1. ____________________________________________________________________________

2. ____________________________________________________________________________

3. ____________________________________________________________________________

4. ____________________________________________________________________________

5. ____________________________________________________________________________

6. ____________________________________________________________________________
Question 2 (continued)

b. List six (6) pieces of advice that you would give to the parent on how to deal with a possible future convulsion. Include three (3) indications to call an ambulance. (6 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

Three (3) indications to call an ambulance:

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________
Question 3 (12 marks)

A 23 year old man presents following a fall onto his outstretched right hand from a height of three metres.

Wrist xrays are taken- refer to the props booklet- page 1 & 2.

a. State four (4) abnormal findings shown in these xrays. (4 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

4. __________________________________________________________________________

b. List four (4) complications of this injury in the first week following injury. (4 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

4. __________________________________________________________________________
A manipulation is to be performed in the emergency department.

c. List two (2) sedative/ analgesic options to facilitate this manipulation. Define the drugs and doses that you would use. He is 70kg. (4 marks)

<table>
<thead>
<tr>
<th></th>
<th>Sedative /analgesic option (2 marks)</th>
<th>Drug/ dose (2 marks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question 4 (12 marks)

A 54 year man presents with chest pain. An initial ECG reveals an inferior STEMI. Fifteen minutes after receiving intravenous thrombolysis a further ECG is taken.

An ECG is taken in the props booklet- page 3.

His observations are:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>150/80</td>
<td>mmHg</td>
</tr>
<tr>
<td>Temp</td>
<td>36</td>
<td>°C</td>
</tr>
<tr>
<td>O2 Sat</td>
<td>98%</td>
<td>on room air</td>
</tr>
</tbody>
</table>

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

1. ________________________________________________

2. ________________________________________________

3. ________________________________________________

4. ________________________________________________

5. ________________________________________________

b. What is the significance of this ECG? State three (3) points of significance. (3 marks)

1. ____________________________________________________________________________

2. ____________________________________________________________________________

3. ____________________________________________________________________________
10 minutes after this ECG is taken, his blood pressure drops to 60 mmHg.

c. List four (4) likely causes for this change in blood pressure. (4 marks)

1. ________________________________________________________________

2. ________________________________________________________________

3. ________________________________________________________________

4. ________________________________________________________________
Question 5 (12 marks)

A 59 year old man presented following a motor vehicle accident via ambulance to your regional emergency department.

A CT abdomen is taken refer to the props booklet- page 4.

a. State four (4) abnormal findings shown on his CT. (4 marks)

1. __________________________________________________________

2. __________________________________________________________

3. __________________________________________________________

4. __________________________________________________________

b. What is the role of hypotensive resuscitation in this patient? State three (3) points in your answer. (3 marks)

1. __________________________________________________________

2. __________________________________________________________

3. __________________________________________________________
Question 5 (continued)

His CT brain and entire spine CT are reported as normal. His CT Pelvis shows an open book pelvic fracture. After referral to the nearest trauma service, it is decided to transfer the patient via road to the nearest tertiary facility 2 hours away. You are to accompany the patient.

c. Assuming the department has adequate staffing, state five (5) key steps in preparation for the transfer of this patient. (5 marks)

1. _______________________________________________________________________

2. _______________________________________________________________________

3. _______________________________________________________________________

4. _______________________________________________________________________

5. _______________________________________________________________________

Question 6 (12 marks)

A 65 year old woman with a history of osteoporosis and depression presents with two weeks of increasing confusion and malaise.

Her observations are:

<table>
<thead>
<tr>
<th>BP</th>
<th>130/85 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>100 /min</td>
</tr>
<tr>
<td>Temperature</td>
<td>36 °C</td>
</tr>
<tr>
<td>GCS</td>
<td>13 E4, V4, M5</td>
</tr>
</tbody>
</table>

Initial blood results are taken- refer to the props booklet- page 5.

a. Provide one (1) calculation to help you to interpret these results. (1 mark)

Derived value 1: ________________________________

b. List three (3) significant abnormal findings in these results. (3 marks)

1. ____________________________________________

2. ____________________________________________

3. ____________________________________________
Question 6 (continued)

c. List four (4) likely differential diagnoses for this presentation. (4 marks)

1. __________________________________________

2. __________________________________________

3. __________________________________________

4. __________________________________________

d. Complete the following table demonstrating two (2) key treatment tasks. How you would achieve each of these tasks? (4 marks)

<table>
<thead>
<tr>
<th>Key treatment task (2 marks)</th>
<th>How will you achieve it? (2 marks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
**Question 7 (12 marks)**

A 72 year old man presents with a painful arm for the last 1 week.

A photograph of the man is taken- refer to the props booklet- page 6.

a. List four (4) differential diagnoses for this appearance. How you would confirm each diagnosis.? (8 marks)

<table>
<thead>
<tr>
<th></th>
<th>Diagnosis (4 marks)</th>
<th>Method of confirmation (4 marks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question 7 (continued)

b. How would you dress these lesions? State four (4) points of explanation. (4 marks)

1. ____________________________________________________________________________

2. ____________________________________________________________________________

3. ____________________________________________________________________________

4. ____________________________________________________________________________
Question 8 (12 marks)

A 45 year old man presents unwell after eating mushrooms.

a. What is/ are the usual initial symptoms of toxic mushroom ingestion? (1 mark)

___________________________________________________________________________

b. Other than accurate species identification, which feature on history most accurately predicts a serious from a benign ingestion. (1 mark)

___________________________________________________________________________

c. Which mushroom is associated with the most number of fatal ingestions? (1 mark)

___________________________________________________________________________

d. List the two (2) most common life threatening effects of mushroom ingestion. (2 marks)

1. ____________________________________________________________

2. ____________________________________________________________
Question 8 (continued)

e. List four (4) key management steps in suspected serious mushroom toxicity. (4 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

4. __________________________________________________________________________

f. List three (3) antidotes that may be used in toxic mushroom ingestions. (3 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________
A 25 year old woman is brought in by ambulance after a T-bone car collision. She was the driver of the car that was hit in the drivers’ side at high speed. She is 36 weeks pregnant and is otherwise well. She is complaining of severe abdominal pain only. Her observations:

<table>
<thead>
<tr>
<th>BP</th>
<th>100/60 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>140/min</td>
</tr>
<tr>
<td>RR</td>
<td>28/min</td>
</tr>
<tr>
<td>O2 saturations</td>
<td>98% on room air</td>
</tr>
<tr>
<td>Temperature</td>
<td>36.8°C</td>
</tr>
<tr>
<td>GCS</td>
<td>15</td>
</tr>
</tbody>
</table>

**a. How would you assess foetal viability in this patient? List three (3) points. (3 marks)**

1. ____________________________________________________________

2. ____________________________________________________________

3. ____________________________________________________________

**b. State four (4) key treatment principles for this patient. (4 marks)**

1. ____________________________________________________________

2. ____________________________________________________________

3. ____________________________________________________________

4. ____________________________________________________________
Question 9 (continued)

The general surgical registrar suggests a “pan scan”.

c. State two (2) possible appropriate arguments for pan scan in this patient. (2 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

d. State two (2) possible appropriate arguments against pan scan in this patient. (2 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________
Question 9 (continued)

Monitoring is applied to the patient - refer to the props booklet - page 7.

e. List three (3) pieces of information gained from this monitoring. (3 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

f. In general, list four (4) signs of foetal distress that you may see in this type of monitoring. (4 marks)

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

4. __________________________________________________________________________
University Hospital, Geelong
Emergency Medicine
Trial Fellowship Exam
Short Answer Questions (SAQ)
Week 13

PROP BOOKLET
Question 3

Xray 1 (2nd Xray on the next page)
Question 3 continued

Xray 2
Question 4
Question 5
### Question 6

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na⁺</td>
<td>144</td>
<td>mmol/L</td>
<td>134-146</td>
</tr>
<tr>
<td>K⁺</td>
<td>4.2</td>
<td>mmol/L</td>
<td>3.4-5</td>
</tr>
<tr>
<td>Cl⁻</td>
<td>98</td>
<td>mmol/L</td>
<td>98 - 106</td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>38</td>
<td>mmol/L</td>
<td>22-32</td>
</tr>
<tr>
<td>Urea</td>
<td>17.2</td>
<td>mmol/L</td>
<td>3-8</td>
</tr>
<tr>
<td>Creatinine</td>
<td>258</td>
<td>micromol/L</td>
<td>45-90</td>
</tr>
<tr>
<td>Glucose</td>
<td>5.4</td>
<td>mmol/L</td>
<td>3.5-5.5</td>
</tr>
<tr>
<td>Calcium</td>
<td>4.47</td>
<td>mmol/L</td>
<td>2.1 – 2.5</td>
</tr>
<tr>
<td>Phosphate</td>
<td>0.92</td>
<td>mmol/L</td>
<td>0.75 – 1.4</td>
</tr>
<tr>
<td>Albumin</td>
<td>40</td>
<td>g/L</td>
<td>35 - 50</td>
</tr>
</tbody>
</table>
Question 7
Question 9
Question 1 (18 marks)

d. What is the role of serum procalcitonin levels in the diagnosis of meningitis? List three (3) points. (3 marks)

- Bacterospecific marker
- Rises early (<4/24) following an endotoxin challenge
- Useful in paediatric meningitis
- Differentiate between viral vs bacterial
- Consensus yet to be reached on Dx value
  - Sensitivities >99% in small studies

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

A 25 year old presents with a severe headache.

e. Complete the reference table below regarding expected CSF findings. (10 marks)

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Bacterial meningitis</th>
<th>Viral meningitis</th>
<th>Fungal (eg Cryptococcal)</th>
<th>Sub arachnoid Haemorrhage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening pressure</td>
<td>50-200 mmH20 ↑</td>
<td>↑</td>
<td>↑</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>Colour</td>
<td>Clear</td>
<td>Turbid</td>
<td>Turbid</td>
<td>Turbid/ clear</td>
<td>Xanthochromia</td>
</tr>
<tr>
<td>WCC</td>
<td>0-5</td>
<td>&gt; 1000 &gt; 500 PMN 100-1000 Lymphocyte predominance 0-200 (Lower in HIV 0-50) 1:500 WBC:RCC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBC</td>
<td>0-5</td>
<td>0.5</td>
<td>Normal</td>
<td>0-5</td>
<td>&gt;1000 (usually &gt;10,000)</td>
</tr>
<tr>
<td>Protein</td>
<td>0.2-0.5</td>
<td>↑</td>
<td>Normal</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>CSF Glucose</td>
<td>60-80% serum ↓ &lt; 60%</td>
<td>Normal</td>
<td>↑</td>
<td>↓ &lt; 60%</td>
<td>Normal</td>
</tr>
</tbody>
</table>

f. List five (5) contraindications to performing a lumbar puncture prior to a CT Brain in the setting of suspected meningitis. (5 marks)
Question 2 (12 marks)

A 2 year old girl presents with a suspected febrile convulsion.

c. List six (6) criteria that must be met for the patient to be safely discharged. (6 marks)

Must be a “simple seizure”
- Febrile
- < 10 min
- Tonic clonic seizure (ie not focal)
- Focus identified
- Normal conscious state after post ictal period
- Adequate social environment/ parental understanding

d. List six (6) pieces of advice that you would give to the parent on how to deal with a possible future convulsion. Include three (3) indications to call an ambulance. (6 marks)

- The most important thing is to stay calm - don't panic
- Time how long the convulsion lasts
- Place your child on a soft surface, lying on his or her side or back
- Do not put anything in their mouth, including your fingers. Your child will not choke or swallow their tongue
- Try to watch exactly what happens, so that you can describe it to the doctor later

(Do not put a child who is having a convulsion in the bath)
(Do not restrain your child)

Three (3) indications to call an ambulance:
- Convulsion lasts more than five minutes
- Your child does not wake up when the convulsion stops
- If your child looks very sick when the convulsion stops

Additional Q:

Q: List three (3) risk factors for recurrence of febrile convulsions in an individual. (3 marks)
- Onset < 1 yr of age
- Repetitive seizures
- Focal features
- Brief duration between fever onset and seizure
- FHx FC
Question 3 (12 marks)

A 23 year old man presents following a fall onto his outstretched right hand from a height of three metres.

A manipulation is to be performed in the emergency department.

f. List two (2) sedative/ analgesic options to facilitate this manipulation. Define the drugs and doses that you would use. He is a 70kg male. (4 marks)

<table>
<thead>
<tr>
<th>Sedative /analgesic option</th>
<th>Drug/ dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep sedation</td>
<td>Propofol 0.5-1 mg/kg (provided no sig. amount opioids already and fasted)</td>
</tr>
<tr>
<td></td>
<td>Ketamine 1-3 mg/kg</td>
</tr>
<tr>
<td>GA</td>
<td>Propofol 2-3 mg/kg</td>
</tr>
<tr>
<td>LAMP</td>
<td>Prilocaine 0.5% 0.5ml / kg</td>
</tr>
<tr>
<td>Interscalene n block</td>
<td>Bupivocaine 0.5% maximum dose 2mg/kg</td>
</tr>
</tbody>
</table>
Question 4 (12 marks)

A 54 year man presents with chest pain. An initial ECG reveals an inferior STEMI. Fifteen minutes after receiving intravenous thrombolysis a further ECG is taken. His observations are BP 150/80 mmHg Temperature 36°C nO2 saturation 98% on room air

a. State five (5) abnormal findings shown in this ECG. (5 marks)
   - Ventricular/ idioventricular escape rhythm rate 54
   - No p waves
   - LAD
   - Qs II, III, aVF
   - STD- V2 3mm, V3 3mm, V4 1mm, and high lateral leads: I 1mm, aVL 2mm
   - STE- 2mm II, III, aVf, 1mm V5-6
   - TWI I, aVL, V2-V4

   Junctional are QRS < 120 msec
   - Junctional bradycardia ≤ 40 bpm.
   - Junctional escape rhythm = 40-60 bpm.
   - Accelerated junctional rhythm = 60-100 bpm.
   - Junctional tachycardia ≥ 100 bpm.

b. What is the significance of this ECG? State three (3) points of significance. (3 marks)

   - Rhythm:
     - Usually well tolerated/ benign
     - Usually self limited
     - Marker of reperfusion - “reperfusion arrhythmia”
     - May indicate further likelihood of needing rescue PCI
     - May imply imminent significant bradycardia
   - Widespread STE and deep STD V2-V3:
     - Marker of extensive myocardial damage
   - Inferior q waves- marker of completed infarct

10 minutes after this ECG is taken, his blood pressure drops to 60 mmHg.

c. List four (4) likely causes for this change in blood pressure. (4 marks)
   - CHB/ bradycardia
University Hospital, Geelong- Fellowship Exam Short Answer Questions

Week 13

- Cardiogenic shock - RV infarct
- Anaphylaxis to thrombolysis
- Bleeding from thrombolysis - major site
- Bleeding from thrombolysis - Pericardial tamponade
- VT

**Question 5 (12 marks)**

A 59 year old man presented following a motor vehicle accident via ambulance to your regional emergency department.

**d.** State four (4) abnormal findings shown in his CT. (4 marks)

- Moderate pericardial effusion
- Large L pleural effusion - likely haemopneumothorax
- L collapsed lung
- Small pleural effusion
- R airspace opacification - collapse/ contusion/ aspiration
- AVR
- L anterior thorax haematoma/ small R side haematoma

**e.** What is the role of hypotensive resuscitation in this patient? State three (3) points in your answer. (3 marks)

- No high level evidence to support its use in blunt multitrauma (well defined role in penetrating trauma)
- Hypotension will worsen ischaemia in traumatised vascular beds
- Avoid overresuscitation - may precipitate cardiac tamponade
- CI if CHI or spinal injury

**Problems with normotensive resuscitation:**

- ↑ perfusion to bleeding site, dislodge thrombus, loss vascular spasm, PC not as good as what is lost

**Hypotensive resuscitation:**

- Studies underway → most benefit in young with single penetrating injury
- Avoid unnecessary IV fluids, inotropes, V/D, short acting β blockers, early Rx to control haemorrhage
- ? how hypotensive → SBP 60-80, MAP 40 suggested in adults (higher in older, CHI, pregnant)
- ↓ role unclear → likely for single, penetrating injury
- ? non penetrating trauma, GIT, Ectopic, APH/PPH
- → ? role for reduction of normal BP

**Contraindications:**

- Blunt trauma
- Controlled haemorrhage
- Uncontrolled haemorrhage when unable to be stopped
- Evidence of serious endorgan hypoperfusion → neurotrauma, RF, MI

**Resus with avoidance of hypertension:**

- AAA rupture, TAD, penetrating truncal/ extremity trauma, epistaxis

His CT brain and entire spine CT are reported as normal. His CT Pelvis shows an open book pelvic fracture. After referral to the nearest trauma service, it is decided to transfer the patient via road to the nearest tertiary facility 2 hours away. You are to accompany the patient.

**f.** Assuming the department has adequate staffing, state five (5) key steps in preparation for the transfer of this patient. (5 marks)

- Stabilise pelvis- pelvic binder
- L ICC, consider R side if rib fractures or pneumothorax
University Hospital, Geelong- Fellowship Exam Short Answer Questions
Week 13

- Pericardiocentesis if signs of tamponade- take equipt. Be prepared to use
- Blood for ongoing resuscitation
- Analgesia
- Warfarin reversal- AVR suggests warfarin likely- care not to reverse too aggressively
- Communication- family/ receiving hospital
- Monitoring- IABP
- Documentation including imaging
  +/- portable US / ETT / secure 2x functioning IV lines / check Equipment

Click on the image below to view the entire PDF (& print/save if necessary)
The role of hypotensive resuscitation in the management of trauma

K Jackson, J Nolan

Introduction

Trauma is the leading killer of young people in the United Kingdom (UK). Death is commonly caused by hypovolemic shock secondary to hemorrhage. Shock presents as circulatory failure leading to an inadequate perfusion and oxygenation of tissues. This ultimately causes irreversible organ failure and death. The primary objective of trauma care is to preserve or restore shock, thus saving the patient. The American College of Surgeons’ Advanced Trauma Life Support Guidelines recommend the early administration of fluids and blood products for patients with severe hemorrhage to maintain mean arterial pressure and organ perfusion. Hypovolemic shock is a medical emergency, and the mortality rate for hypovolemic shock in trauma patients is significantly higher compared to other causes of shock.

Hypotensive resuscitation

Most of the potential benefits of hypotensive resuscitation were evaluated by animal experiments using controlled hemorrhage (CH) animal models in the 1960s and 1970s. The Wiggers preparation involved the restraint of anesthetized (IV) rabbits from whom the animals were bled and maintained without resuscitation. In this model, animals were anesthetized, intubated, and placed in a supine position. The animals were then bled from the carotid arteries and maintained in hemorrhage until hypotension or death occurred. The animals were then resuscitated with crystalloid fluids to maintain a mean arterial pressure of 80 mmHg. The results of these experiments showed that hypotensive resuscitation was associated with a higher survival rate compared to normotensive resuscitation.

The Journal of TRAUMA Injury, Infarction, and Critical Care

Hypotensive Resuscitation during Active Hemorrhage: Impact on In-Hospital Mortality

Richard F. Dutton, MD, MSH, Colin M. MacKenzie, MD, and Thomas M. Sivak, MD

Hypotensive resuscitation is the leading cause of death after trauma, and the identification and management of hemorrhage at the time of admission to the American College of Surgeons Advanced Trauma Life Support Guidelines (ATLS) guidelines include rapid fluid resuscitation in all hemorrhaging trauma patients. Hypotensive resuscitation is controversial, and the optimal resuscitation strategy is not well established. In clinical practice, rapid fluid resuscitation is often administered in the emergency department to maintain mean arterial pressure and organ perfusion. The main advantage of hypotensive resuscitation is that it is simpler and more easily administered compared to normotensive resuscitation.

Hypotensive resuscitation has several potential benefits, including improved organ perfusion, reduced cytokine release, and improved hemostatic function. However, hypotensive resuscitation is also associated with several potential risks, including decreased myocardial contractility, decreased oxygen delivery to the tissues, and increased risk of disseminated intravascular coagulation (DIC).

Hypotensive resuscitation is an important strategy in the management of trauma, and it is essential to optimize resuscitation strategies to improve outcomes in trauma patients.
Question 6 (12 marks)

A 65 year old woman with a history of osteoporosis and depression presents with two weeks of increasing confusion and malaise. Her observations are: BP 130/80 mmHg HR 100/ min Temp. 36°C GCS13 E4/V4/M5

- Provide one (1) calculation to help you to interpret these results. (1 mark)
  - Derived value 1: \( \text{Se Osmo} = 310 (\uparrow) \)

- List three (3) significant abnormal findings in these results. (3 marks)
  - Severe hypercalcaemia
  - A on Cr RF
  - High bicarbonate suggesting alkalosis (expect ↓ with degree of renal impairment)

- List four (4) likely differential diagnoses for this presentation. (4 marks)
  - Dehydration secondary to vomiting
  - Milk alkali syndrome
  - 1° hyperparathyroidism eg parathyroid adenoma
  - 1° Malignancy- eg myeloma
  - 2° Malignancy- bony mets
  - Drugs eg Vit D (for osteoporosis)
  - Immobilisation due to toxic ingestion

- Complete the following table demonstrating three (3) key treatment tasks. State how you would achieve each of these tasks. (6 marks)

<table>
<thead>
<tr>
<th>Key treatment task (2 marks)</th>
<th>How will you achieve it? (2 marks)</th>
</tr>
</thead>
</table>
| Rehydrate to Rx ↑Ca and ARF | • NS  
• Aim U/O > 0.5 ml/kg/ hr |
| Rx hypercalcaemia | • Bisphosphonates |
| Rx other 1° illness | • Eg. UTI  
• Toxic ingestion |
Question 7 (12 marks)

A 72 year old male presents with a painful arm for the last 1 week.

a. List four (4) differential diagnoses for this appearance. How would you confirm each diagnosis? (8 marks)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Method of confirmation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullous impetigo</td>
<td>Clinical - golden crust</td>
</tr>
<tr>
<td></td>
<td>Swab - +ve for S Aureus</td>
</tr>
<tr>
<td>Bullous pemphigus</td>
<td>+ve Nickolsky sign, biopsy</td>
</tr>
<tr>
<td>Bullous pemphigoid</td>
<td>-ve Nickolsky sign, biopsy</td>
</tr>
<tr>
<td>Burns</td>
<td>History</td>
</tr>
<tr>
<td>H zoster with 2°bacterial</td>
<td>Clinical, PCR</td>
</tr>
</tbody>
</table>

b. How would you dress these lesions? State four (4) points of explanation. (4 marks)

- Non adhesive dressing- Vaseline impregnated dressing
- Absorptive layer
- Crepe bandage
- Aseptic technique to prevent secondary bacterial infection
- Leave blisters intact unless interfering with dressings
- (If interfering- drain with sterile needle)
- Remove crusting if impetigo
Question 8 (12 marks)

A 45 year old man presents unwell after eating mushrooms.

**g.** What is/are the usual initial symptoms of toxic mushroom ingestion? (1 mark)
   - GIT upset - D’s & Vs

**h.** Other than accurate species identification, which feature on history most accurately predicts a serious from a benign ingestion? (1 mark)
   - Timing of onset of symptoms - benign usual symptoms < 3/24, sinister > 6/24

**i.** Which mushroom is associated with the most number of fatal ingestions? (1 mark)
   - Amanita Phalloides

**j.** List the two (2) most common life threatening effects of mushroom ingestion. (2 marks)
   - Liver failure
   - Renal failure

**c.** List four (4) key management steps in suspected serious mushroom toxicity. (4 marks)
   - Early and aggressive gastric decontamination
     - Induce emesis if < 2/24 or if GIT onset symptoms onset > 6/24 from ingestion
     - MDAC
   - Supportive care
   - Consultation with a Toxinologist (all cases)

**k.** List three (3) antidotes that may be used in toxic mushroom ingestions. (3 marks)
   - Atropine
   - NAC
   - Penicillin
   - Silibinin
   - Cimetidine
   - Alphalipoic acid (Thioctic acid)
   - Pyridoxine

*NB: non are supported by RCT, anecdotal reports only*
Mushroom Poisoning

Key points

- Contrary to popular belief, there are no easy ‘rules of thumb’ that will distinguish toxic from non-toxic species.
- Cooking will not detoxify a poisonous species.
- Only an experienced mycologist with a microscope can reliably identify many particular species!
- Toxic/ non-toxic sp co-exist side by side in wild → species shown to you from the wild may not be the species that was ingested!
- 95% of fatal ingestions worldwide are due to Amanita Phalloides. (Death cap)
- Amanita muscaria

Clinical Features of mushy munching

- The most important feature is the clinical presentation and time of ingestion → usually more important than attempts at accurate identification of the sp ingested
- Regardless of species, initial symptoms of mushroom poisoning will be GIT upset
  - mushroom poisoning should be in DDx of acute GIT upset of uncertain causation
- Clinical course of symptoms can be used as a guide to the likely offending species
  - Time of onset of symptoms from ingestion is the most important feature in this regard.

Non serious mushies. nsvchodelic. magic etc

Early onset symptoms symptoms (<3hrs)

1. GIT upset
2. Generally follows:
   i. autonomic disturbances, (muscaninic or sympathom)
   ii CNS disturbances, esp. confusion, hallucinations.

Generally follows benign self-ltd course over 6 hrs.

Treatment:

- Early and aggressive gastric decontamination
  - If very early presentation (<2hrs) ipecac may be considered.
  - Later presentation (>3hrs), charcoal may be given, if vomiting is not a prominent feature.
  - Early charcoal hemoperfusion may be useful in cases of amanita phalloides ingestion
- Treatment is otherwise supportive
- Many specific treatments have been advocated but not proven
  - Cimetidine
  - Penicillamine
  - NAC
- Enquiry into possibility of other people having ingested same mushrooms is important.
- Education re not eating field mushies

Disposition
- Do not discharge patient without seeking advice of toxicologist
  - Need to watch for late development of severe liver failure, ARF
  - Toxicology Unit at the Austin Hospital should be contacted for further advice

Ingestion

1. GIT upset (amatoxins may be delayed up to 12hrs) →watery diarrhoea
2. A latent phase where patient may seem well.
3. At 3-4 days onset of severe liver failure, ARF
University Hospital, Geelong - Fellowship Exam Short Answer Questions
Week 13

- Consider d/w liver transplant unit in case of huge OD
Question 9 (18 marks)

A 25 year old woman is brought in by ambulance after a T-bone car collision. She was the driver of the car that was hit in the drivers’ side at high speed. She is 32 weeks pregnant and is otherwise well. She is complaining of severe abdominal pain only. Her observations: GCS 15 HR 140/min BP 100/60mmHg RR28/min O2 saturations 98% on RA Temperature 36.8°C

i) How would you assess foetal viability in this patient? List three (3) points. (3 marks)
   - Antenal Hx- prior US ? single/ multiple any abnormalities detected
   - Vaginal exam / speculum ? vaginal bleeding/ ROM/ Show- sign of 1st stage of labour
   - US FHR/ Mvts/ Evidence of abruption
   - Continuous CTG monitoring > 4/24

NB: Fundal height and signs of peritonism unreliable

ii) State four (4) key treatment principles for this patient. (4 marks)
   - Management of 2 patients- Maternal resuscitation is the best method of foetal resuscitation (best for mum= best for baby)
   - Nurse in L lateral or wedge R hip (Pressure off aorta)- whilst maintaining spinal immobilisation
   - Early consultation with Obstetrician & surgeons
   - Theatre if significant abdominal trauma identified
   - Analgesia required (“severe pain”)
   - Rh Isoimmunisation prevention- Ig as indicated
   - Admit for observation

NB: Limit radiation is strictly speaking assessment.

The general surgical registrar suggests a “pan scan”.

iii) State two (2) possible appropriate arguments for pan scan in this patient. (2 marks)
   - High risk mechanism (be careful- mechanism has been shown to NOT be a good predictor of need for pan scan)
   - If to OT- ongoing spinal immobilisation required and potential occult injury remain undefined
   - May improve directed Sx management
   - A diagnostic modality necessary for maternal evaluation should not be withheld o basis of potential hazard to foetus

iv) List two (2) possible appropriate arguments against pan scan in this patient. (2 marks)
   - Large radiation dose and certain scans may not be indicated eg CTB
   - Will delay definitive Rx if this is indicated on clinical grounds/ +ve eFAST
   - Other screening plain XR may be sufficient eg CXR

v) List three (3) pieces of information gained from this monitoring. (3 marks)
   - Uterine contractions- 2 minutely
   - Late decelerations
   - FHR between 140-160

vi) In general, list four (4) signs of foetal distress that you may see in this type of monitoring . (4 marks)
   - Lack of beat to beat variability
   - Resting tachycardia > 160 bpm
   - Extensive depth to decelerations ( < 100)
Late decelerations
Prolonged decelerations ( > 90 sec)
Variable decelerations
Monitoring in labour
Normal FHR pattern on continuous monitoring has > 95% probability of foetal well-being

US
→ Doppler → FHR
→ Uterine size 1) > expected (placental abruption) 2) < expected (uterine rupture) →eg in trauma
→ confirm foetal movement
Combined with external strain gauge over abdo for recording motion of uterus during contractions
Limitations limited ability to determine ST variability
Strength of uterine contractions cannot be quantified

Internal monitoring
Greatest amount and accurate information
Electrode to presenting part (usu head)
ECG impulses amplified → transmitted to cardiotachometer
Filter converts foetal ECG into discrete electrical impulses
Standard calibration 1min/ cm (square) → 20 minutes between 2 numbers

Normal
▪ Basal FHR → 120-160 beats/ min
▪ Normally small, rapid, rhythmic fluctuations 5-15 bpm → sign of good autonomic activity, foetal well being
▪ Accelerations→ physiological, usually 2 per 20 minutes.
  ∴ reassuring

Signs of foetal distress
▪ Lack of beat to beat variability
▪ Resting tachycardia > 160 bpm
▪ Extensive depth to decelerations ( <100)
▪ Late decelerations
▪ Prolonged decelerations ( >90 sec)
▪ Variable decelerations

Decelerations→ transient ↓ FHR 2° to uterine contractions amplitude deceleration in bpm is difference from basal FHR and lowest FHR

Early during normal labour especially latter stages contractions compress foetal skull → reflex bradycardia at commencement of contraction
FHR normal post contraction uniform shape to decelerations more common post ROM rarely <100bpm or >90 seconds duration

Late ↓ FHR after beginning of contraction uniform FHR does not return to normal until well after contraction caused by ↓ uteroplacental gas exchange <90 sec baby may be born with ↓ Apgars

Variable compression of umbilical cord
decelerations at odd times most common pattern associated with foetal distress not uniform in shape or amplitue (wide variation) relieve by turning mother from back to side or from one side to other
CTG explained:

A Cardiotocograph (CTG) is a record of the foetal heart rate (FHR) either measured from a transducer on the abdomen or a probe on the foetal scalp. In addition to the foetal heart rate another transducer measures the uterine contractions over the fundus.

The interpretation of a cardiotocograph is complicated but this site will aim to demonstrate some of the more straightforward characteristics a CTG may display. The CTG trace generally shows two lines. The upper line is a record of the foetal heart rate in beats per minute. The lower line is a recording of uterine contractions from the toco. The vertical scale of this trace depends on how the transducer is picking up the contractions so interpretation needs to be in relation to the rest of the trace. The trace may also have markings on it that are indications that the mother has felt a foetal movement (operated by a switch given to the mother). Each big square represents 1 min on the X axis.

The following section describes the different patterns seen on a CTG.

**Baseline Rate:** This should be between 110 and 150 beats per minute (BPM) and is indicated by the FHR when stable (with accelerations and decelerations absent). It should be taken over a period of 5-10 minutes. The rate may change over a period of time but normally remains fairly constant.

This is a section of CTG showing a typical normal baseline rate.

**Bradycardia:** This is defined as a baseline heart rate of less than 110 bpm. If between 110 and 100 it is suspicious whereas below 100 it is pathological. A steep sustained decrease in rate is indicative of foetal distress and if the cause cannot be reversed the fetus should be delivered.

This is a section of CTG showing a bradycardia.

**Tachycardia:** A suspicious tachycardia is defined as being between 150 and 170 whereas a pathological pattern is above 170. Tachycardias can be indicative of fever or foetal infection and occasionally foetal distress (with
other abnormalities). An epidural may also induce a tachycardia in the fetus. This is a section of CTG showing a tachycardia.

**Baseline variations:** The short term variations in the baseline should be between 10 and 15 bpm (except during intervals of foetal sleep which should be no longer than 60 minutes). Prolonged reduced variability along with other abnormalities may be indicative of foetal distress.

This is a section of CTG showing decreased baseline variability.

**Accelerations:** This is defined as a transient increase in heart rate of greater than 15 bpm for at least 15 seconds. Two accelerations in 20 minutes is considered a reactive trace. Accelerations are a good sign as they show foetal responsiveness and the integrity of the mechanisms controlling the heart.

This section of CTG shows a typical acceleration in response to stimulus.
Decelerations: These may either be normal or pathological. Early decelerations occur at the same time as uterine contractions and are usually due to foetal head compression and therefore occur in first and second stage labour with decent of the head. They are normally perfectly benign. Late decelerations persist after the contraction has finished and suggest foetal distress. Variable decelerations vary in timings and shape with respect to each other and may be indicative of hypoxia or cord compression.

The following CTGs show examples of early, late and variable decelerations.

A normal CTG is a good sign but a poor CTG does not always suggest foetal distress. A more definitive diagnosis may be made from foetal blood sampling but if this is not possible or there is an acute situation (such as a prolonged bradycardia) intervention may be indicated.