QUESTION 1

A 67-year-old lady presents to the Emergency Department (ED) with a history of increasing Shortness of Breath over the last 2 days. She is brought in by ambulance and was given an anti-emetic on route.

She has a past medical history of Diabetes Mellitus, Lung Cancer (NSCLC) and Hypertension

The patient’s ECG is shown:
(a) State 4 abnormalities seen on the patient’s ECG

1.

2.

3.

4.

(b) List 5 life threatening differential of the shortness of breath presentation in this patient

1.

2.

3.

4.

5.
(c) State and justify 5 further investigations to perform in this patient (6 marks)

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<th>INVESTIGATION</th>
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QUESTION 2

A 26-year-old professional cyclist has presented to the ED feeling unwell. He states he has been lethargic, nauseous and had strong smelling urine for the last 24 hours. He has come by ambulance to the ED but has refused all treatment until this week. He states that he received a cycle of chemotherapy 3 days ago and is noted by triage to be ‘Hyperventilating’.

Initial Observations:

- Blood Pressure 110/82
- Heart Rate 120
- Oxygen Saturations 97% (room air)
- Respiratory Rate 24/min
- Temperature 37.0 degrees

ABG and Electrolytes (Room Air)

- pH 7.19
- CO2 21 mmHg
- PO2 140 mmHg
- HCO3 11 mmol/L
- Na+ 135 mmol/L
- K+ 7.1 mmol/L
- Chloride 98 mmol/L
- Creatinine 315 µmol/L

(a) State a unifying diagnosis and 3 possible differential diagnoses (3 marks)

i) Unifying Diagnosis

ii) Differentials

1.

2.

3.
(b) List and justify 3 further blood tests that you would perform in this patient  (3 marks)

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(c) Prescribe medications to treat this patient in the Emergency Department  (8 marks)

The decision is made to intubate the patient. Prescribe the drugs for RSI in this patient:

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<th>Medication / Infusion</th>
<th>Dose / Protocol</th>
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(d) Prescribe fluids to treat this patient in the Emergency Department  (6 marks)

The decision is made to intubate the patient. Prescribe the drugs for RSI in this patient:

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<th>Fluid</th>
<th>Rate</th>
<th>End point</th>
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QUESTION 3

A 40-year-old lady of South African descent presents to the ED with a history of a rash. She feels otherwise well. The rash is not itchy and is mostly on the anterior aspect of her legs.

She recently gave birth to a child (6 months ago) and is breastfeeding.

She recently returned from a 4-week holiday in Sub-Saharan Africa.

**Observations:**

- Blood Pressure 140/95
- Heart Rate 90
- Oxygen Saturations 99%
- Respiratory Rate 20/min
- Temperature 37.2 degrees

**Clinical Photograph**
(a) State the likely diagnosis in this patient (1 marks)

(b) List 5 possible causes of this rash (5 marks)

1. 
2. 
3. 
4. 
5. 

(c) List 4 medications that a contraindicated in the Breastfeeding patient (4 marks)

1. 
2. 
3. 
4. 
5. 
A 14-year-old girl presents to the Emergency Department with her parents complaining of Shortness of Breath. Her symptoms have gradually worsened over the last 3 days. She has recently finished a course of antibiotics for a Urinary Tract Infection from her GP.

Past Medical History includes Recurrent Abdominal Pain and Panic Disorder. Her medications include Citalopram and ‘Ritalin’.

**Laboratory Results**

**Full Blood Count**

- Haemoglobin 7.1 g/dL
- WCC $6.5 \times 10^9$/L
- Platelets $120 \times 10^9$/L
- MCV 102

**Clinical Chemistry**

- Urea 7.1mmol/L
- Creatinine 89 µmol/L
- Na 133 mmol/L
- K 5.9 mmol/L
- Chloride 99mmol/L
- Bicarbonate 24 mmol/L

**Liver Function Tests**

- Bilirubin 52 µmol/L
- AST 12 IU/L
- ALT 20 IU/L
- Alk Phos 120 IU/L
- GGT 105 IU/L
- Albumin 42 mmol/L
a) State the overarching diagnosis shown on the patient’s blood results (1 mark)

b) List the additional blood results you would send to confirm the diagnosis (4 marks)

1.

2.

3.

4.

c) What are the possible causes that could account for the patient’s blood results (6 marks)

1.

2.

3.

4.

5.

6.
QUESTION 5

A 60 year old man presents to the Emergency Department with his partner complaining of increasing headache over 2 weeks associated with intermittent confusion and bizarre behaviour. He has lost 10kg of weight in the last 4 months since returning from a business trip overseas and had a few bouts of loose stool since returning. Past medical history includes Type II Diabetes (diet controlled) Irritable Bowel Syndrome and Gout treated with Allopurinol 300mg daily. The patient is keen to leave the ED as soon as possible.

CT SCAN
(a) State the anatomical plane of the patient's CT Head' (1 mark)

(b) State main abnormality patient’s CT Head (1 mark)

(c) List 4 possible causes of the appearance of the lesions on the patient’s CT Head (4 marks)

1.

2.

3.

4.

(d) The patient demands to leave. He has called for a taxi.

List immediate 6 actions in the management of this situation (6 marks)

1.

2.

3.

4.

5.

6.
QUESTION 6

A 50-year-old lady presents to the Emergency Department with a GP letter stating that her “blood tests are abnormal and that she needs further review in hospital”.

“Abnormal Blood Result – Calcium 3.13 (corrected)”

She has had increasing shortness of breath for 3 months, on going cough and a single episode of haemoptysis. The GP has tried some salbutamol with no significant improvement.

Past Medical History includes Hypertension and Appendicectomy. She is otherwise well currently working as a secretary and living with her husband and two children who are well. Triage have ordered a CXR:

Chest X-ray

(a) State the unifying diagnosis for hypercalcaemia and the CXR appearance (1 mark)
(b) List 3 other differential diagnoses of the appearance shown on the CXR (3 marks)

1. 

2. 

3. 

b) Prescribe two treatments for severe hypercalcaemia (patient estimate weight 60kg)

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<th>Dose / Protocol</th>
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List 5 common symptoms associated with hypercalcaemia (5 marks)

1. 

2. 

3. 

4. 

5.
QUESTION 7

A 66-year-old man with heavy smoking history and a diagnosis of COPD presents with haemoptysis and palpitations. He has had an increasing cough and sore throat over the last 2 days. Medications include Rivoroxiban, Tiotropium, Seretide, Theophylline and Salbutamol. The patient is not on home oxygen.

12 lead ECG
a) State the abnormalities shown on the 12 lead ECG above (4 marks)

1. 

2. 

3. 

4. 

b) List the causes of this arrhythmia (3 marks)

1. 

2. 

3.
c) Other than Theophylline list 3 other drugs in toxicity or overdose can benefit from Multi-dose activate charcoal (3 marks)

1. 

2. 

3. 

d) List your priorities in management should this patient have worsening haemoptysis (6 marks)

1. 

2. 

3. 

4. 

5. 

6. 
A 17-year-old boy presents to the Emergency Department after a sporting injury accompanied by the cricket team coach. He was hit in the mouth with a cricket ball hit by a batter hitting the ball at him while he was fielding at "silly mid off". Observations are within normal limits. There are no other injuries.

Clinical Photograph

a) Describe 3 abnormalities seen in this photo

1. 

2. 

3. 

(3 marks)
b) State anatomically which tooth is affected

(1 mark)

c) State which “Ellis Class” of dental injury is seen in this picture

(1 mark)

d) List 5 key priorities in the management of this patient

1.

2.

3.

4.

5.
Pass Criteria Notes and Relevant Links

• Question 1

• Pericardial Effusion

• ECG showing low voltage complexes and ‘alternans’

• http://lifeinthefastlane.com/education/ccc/pericardial-effusion- tamponade-echocardiography

  • ESSENTIAL KNOWLEDGE

  • 1) Recognition of likely Pericardial Effusion with possible Tamponade and at least 3 DDx with PE as another possibility (given the NSCLC) 2) Appropriate Description of ECG – systematic 3) Implications - Critically unwell – Time Dependent Emergency

  • 4) Bonus marks for suggesting use of USS, CXR, CTPA etc.

• Question 2

• Tumour Lysis Syndrome

• http://lifeinthefastlane.com/education/ccc/tumour-lysis-syndrome

  • ESSENTIAL KNOWLEDGE

  • 1) Recognition of an important Haematological Emergency 2) Appropriate Description of Bloods – systematic 3) Implications - unwell – admission required – IV fluids ++

  • IV Fluids Essential, End point urine output >1ml/kg

  • May Need Rasburicase/Allopurinol

• Question 3

• Erythema Nodosum

• ESSENTIAL KNOWLEDGE

1) Recognition of rash – description - systematic
2) Appropriate Differential including Erythema Nodosum
3) Implications – patient is well – likely to resolve within 6 weeks but prob needs observation in hospital and consultation regarding cause

4) A broad differential diagnosis and appropriate investigations (bedside, imaging and labs)

• Question 4

• ESSENTIAL KNOWLEDGE

Acute Haemolysis – broad differential required


1) Recognition of haemolysis 2) Appropriate Description of Bloods – systematic
3) Stop antibiotics – Treat underlying cause

4) Reasonable Differentials – appropriate tests (LDH, Reticulocytes etc.)

• Question 5

CT BRAIN - Ring Enhancing Lesions


Description - http://en.wikipedia.org/wiki/Ring-enhancing_lesion

• ESSENTIAL KNOWLEDGE

1) Recognition of Ring Enhancing Lesions 2) Appropriate Differentials
• **Question 6**

- Hypercalcaemia
- Bilateral Lymphadenopathy
- ?Sarcoidosis


  **ESSENTIAL KNOWLEDGE**

  1) Recognition of two abnormalities – High Ca and CXR
  2) Appropriate Description of CXR – Shows Lymphadenopathy
  3) Implications – well but has significant High Ca – differential and work up in ED

  4) Sarcoid as differential and other appropriate causes of CXR and High Ca.

- Calcium Treated with Bisphosphonate and Fluids (saline)

• **Question 7**

- BBB pattern with tachycardia (irregular) - Likely Multifocal Atrial Tachycardia associated with underlying COPD


  **ESSENTIAL KNOWLEDGE**

  1) Recognition of an irregular tachycardia - need at least 3 differentials
  2) Reference to M.A.T. – treating underlying COPD Exacerbation is important
• **Question 8**

• Dental Injury – Ellis Class III


• Avulsions - [http://lifeinthefastlane.com/minor-injuries-004](http://lifeinthefastlane.com/minor-injuries-004)


• **ESSENTIAL KNOWLEDGE**

• 1) Recognition of severe dental injury (don’t need to use ‘Ellis Class’) 2) Naming System for Teeth and Appropriate Description