

SAQ PAPER October 2005

Q1.

A 38 year old man presents to the ED with shortness of breath but has no chest pain. His chest is clear and his observations and investigations are as follows:

Pulse 110 BP 120/65 Sats (on Air) 91%

ABG (On Air)	pH	7.41
	pCO ₂	3.5
	pO ₂	8.5
	HCO ₃	26
	BXS	-1

1. What four factors in this patient's history might suggest he has had a Pulmonary Embolus? (4 marks)

Well's Criteria for PE:

History of Immobilisation, Recent Surgery, Cancer, Lower Limb Paralysis, Cardio-respiratory disorders, Thrombophilia, Strong Family History, Previous proven or current PE or DVT

2. What three investigations would exclude other causes for his symptoms according to BTS guidelines? (3 marks)

ECG, CXR, Echocardiogram

3. The D-Dimer is raised at 330 (Normal<273) what are your next two management steps? (2 marks)

Oxygen, Administer Tinzaparin 1.75U/kg

4. The patient deteriorates, Pulse 130, BP 80/60, what would you consider next (1 mark)

Give Fluids, Request Urgent Echocardiogram, Consider Thrombolysis

Q2.

A seven year old boy presents with 12 hours of headache, neck stiffness, nausea and vomiting. His temperature is 38.9 C and his GCS is 12/15.

His investigations are as follows:

Na	115
Urea	6.3
Creatinine	100

CT Head Scan



1. Give two possible radiological diagnoses? (2 marks)

Meningitis, Encephalitis, Raised Intracranial Pressure

2. Why is the sodium low? (1 mark)

Syndrome of Inappropriate ADH secretion

3. What ED investigations would do for the low sodium? (5 marks)

Serum and Urine Osmolalities, Serum Cortisol & Serum ACTH, Glucose, CXR, FBC

4. What neurological complications could result from the low sodium? (2 marks)

Fitting

Demyelination during correction of hyponatremia well recognised

Q3.

A sixty-five year old alcoholic is found fitting in the street, he smells of alcohol and is brought in by paramedics, still actively fitting. His airway is controlled and he is on 15 litres of oxygen/ minute via non-rebreathing mask. His BM is 2.2.

1. What is the definition of status epilepticus? (1 mark)

A prolonged seizure (usually defined as lasting longer than 30 minutes) or a series of repeated seizures; a continuous state of seizure activity; may occur in almost any seizure type.

2. What in a chronic alcoholic predisposes them to fitting? (4 marks)

*Hypoglycaemia/Excess Alcohol or Alcohol Withdrawal
Hyponatraemia
Falls & ICH
Poor compliance to anticonvulsants
Hepatic Encephalopathy
Overdose of TCAs*

3. What are your three management priorities? (3 marks)

*Maintain airway/oxygenation
Glucose 50mls of 50% intravenous
Thiamine 100mg intravenous,
Lorazepam 4mg intravenous*

4. If the fitting does not stop what would your management be? (2 marks)

*Lorazepam 4mg intravenously
Phenytoin infusion 18mg/kg over 30minutes*

Q4.

A sixty-five year old man has an itchy generalised rash. Your new SHO thinks the rash is scabies.



1. Describe the rash. (2 marks)
*Erythematous papular rash, with excoriations and evidence of burrows
Likely palm of hand*
2. What is the differential? (2 marks)
Scabies, Pompholyx
3. Why is this rash itchy? (1 mark)
Dermatitic reaction to faeces of scabies mite
4. What is the treatment of choice? (1 mark)
Permethrin, Malathion
5. What two features in the history would suggest the diagnosis? (2 marks)
Nighttime itchy and after hot shower, Genital Itching
6. What would you tell the patient? (2 marks)
*Apply at bedtime. Wash off in the morning. Repeat in 1 week.
Treat all household contacts, Launder all bedlinen/clothes/towels*

Q5.

A thirty-five year old woman who is 38 weeks pregnant complains of headache and has a GCS of 13/15. Her observations and investigations are as follows:

Pulse=110 BP=160/95

Hb	8	Poikilocytes Seen
WCC	9.3	
Plat	35	
Urea	10	
Cr	130	
Bili	15	
AST	150	
ALT	600	
Alk P	45	

Urine: Protein +++ Blood ++

1. What are the haematological abnormalities and what is the cause? (2 marks)

Anaemia secondary to haemolysis

Thrombocytopaenia secondary to haemolysis (?increased destruction)

2. What is the diagnosis? (1 mark)

Pre-eclampsia complicated by HELLP syndrome

3. How would you control the blood pressure? (2 marks)

Labetolol intravenously initially 10mg, then infusion

4. What are your next management steps? (5 marks)

Call Anaesthetist/ Obstetrician/ Neonatologist

Insert arterial line

Intravenous magnesium 4-6g over 5-10mins (seizure prophylaxis should be given and BP controlled before delivery [Emery Med Secrets 3rd ed].)

Monitor baby by CTG

Deliver Baby

Q6.



Blood Results:

Na	138
K	6.2
Ur	43
Cr	612
Dig	16ng/ml

1. What do you see on this ECG? (4 marks)

*Atrial Flutter, Bradycardia, T wave inversion in V4-6 and inferior lead.s
Type II Heart Block*

2. What are your indications for digibind? (3 marks)

*Digoxin level > 10ng/ml, Life Threatening Arrhythmia,
Ingestion of > 10mg of digoxin*

3. Other than digibind what are your other non-arrhythmia management steps and why are you taking these steps? (3 marks)

*Intravenous Fluids- to address hypotension and ARF (renally excreted)
Salbutamol Nebs, i/v Insulin & Dextrose/ Sodium Bicarbonate- to address
Hyperkalaemia
Intubate & Give Charcoal-to reduce digoxin absorption
Refer to Nephrologist and Intensivist*

Q7.

A young man has been exposed to a chemical at the train station and is short of breath and has blurred vision. He collapses after a few minutes in the department. Many other passengers are affected.

1. Other than calling the ED consultant, what four steps would you take? (4 marks)

*Isolate Patient and Isolate ED from hospital
Instruct staff to put on Personal Protective Equipment
Call Firebrigade to set up decontamination facility outside department
Declare Hospital MAJAX*

2. What are the other muscarinic features of organophosphorus poisoning? (3 marks)

Salivation, Constricted Pupils, Diarrhoea & Vomiting, Bradycardia

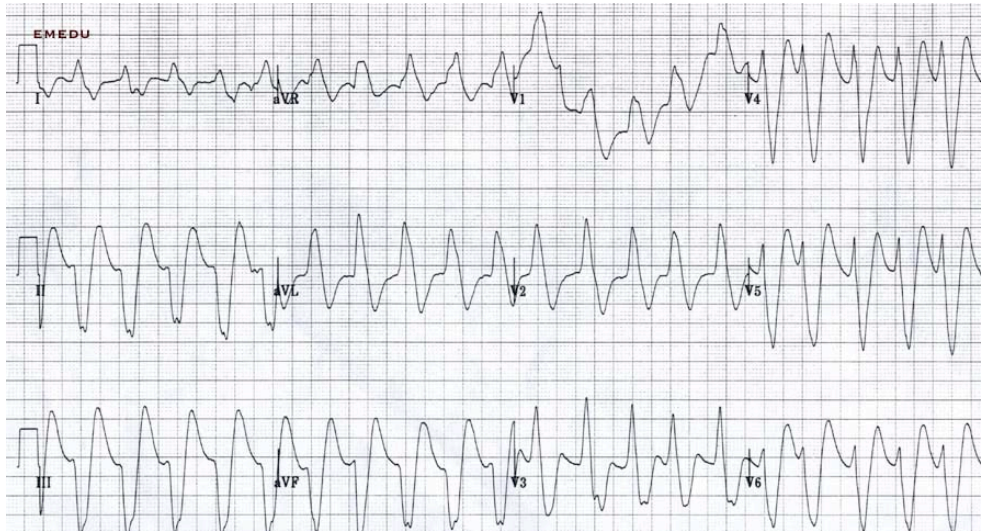
3. Which three drugs would you use? (3 marks)

*Atropine (up to 3mg), Pralidoxime(30mg/kg), Diazepam (0.5mg/kg),
Neostigime (50-70mcg/kg, max 5mg)*

Q8.

A thirty year old solicitor is due to be in court for a difficult case tomorrow. She is found collapsed by her husband and then fits for 60 seconds. Her observations and ECG are shown:

Pulse 130 BP 90/60



1. What do you see on this ECG? (2 marks)

*Broad Complex Tachycardia
Extreme Axis*

2. What is your diagnosis? (1 mark)

Ventricular Tachycardia due to Tricyclic Overdose

3. What antiarrhythmic would you use? Give drug name, mechanism, and state how you would monitor its effectiveness. (3 marks)

*Drug=Sodium Bicarbonate 8.4% 50ml intravenously
Mechanism=Blocks fast sodium channels and protein binding
Effectiveness=Width of QRS complex*

4. What is the further management of this patient? (2 marks)

*Transfer to ICU
Psychiatric Assessment when medically fit*

Q9.

A twenty year old man is kite surfing and is catapulted into a shallow water landing on his head. He was RSI'd with etomidate and suxamethonium as his GCS was less than eight, is fully immobilized, has had 2 litres of fluid, and is now on a propofol infusion.

His observations are: Pulse 55 BP 90/60

His ABG (on 15L/min) is: pO₂ 38, pCO₂ 4, Lactate 4.5

His CT Head shows Oedema and CT Abdomen is normal.

His C-Spine radiograph is below:



1. Explain his haemodynamic abnormalities. (2 marks)

*Hypotension due to anaesthetic agents and possible hypovolaemia
Bradycardia due to C-Spine injury? (Neurogenic shock due to sympathetic chain involvement in the neck)*

2. Describe the C-Spine radiograph (3 marks)

C6 Anterior vertebral body fracture, Soft Tissue Swelling, Inadequate film, Endotracheal Tube in situ

3. Explain four neurological abnormalities would you might find in this patient? (4 marks)

*Loss of anal tone, Priapism, Loss of ankle jerks- due to spinal cord injury
Horner's Syndrome- Intrapment of sympathetic plexus*

4. Why is he hypotensive? (1 mark)

Neurogenic Shock involving sympathetic plexus

Q10.

A 13 month old child has abdominal pain, bloody diarrhoea and a rash. She recently had an URTI. She is dehydrated clinically.

Hb 16.3 WCC 9.7 Plat 412 Coagulation Screen- Normal

Radiograph:



1. What does the radiograph show? (1 mark)

Dilated bowel and stomach

2. Give three possible diagnoses? (3 marks)

*Volvulus, Intussusception due to Henoch Schölein Purpura,
Intussusception due to Mesenteric Adenitis*

3. What advice would you give the SHO regarding fluids? (3 marks)

Fluid Resuscitate until CRT < 2 seconds, using boluses of 20ml/kg of 0.9% NaCl. Titrate fluid to ensure Urine Output > 1ml/kg/hr. Close monitoring essential.

4. How do you treat this condition? (3 marks)

Air Enema, Gastrografin Enema, Laparotomy all possible treatments

Q11.

A three year old has had a cough and stridor for 12 hours but no wheeze. His pulse is 160, Respiratory Rate is 45 and has subcostal and intercostal recession and tracheal tug.

1. Apart from croup what is your differential diagnosis? (4 marks)

Inhaled FB, Injury to larynx, Diphtheria, Bacterial tracheitis, Epiglottitis, Anaphylaxis

2. Give four features of a recognized croup score? (2 marks)

*Presence of: Stridor, Respiratory Distress, Cyanosis
Reduced Consciousness, Reduced Air Entry on Auscultation*

3. Name three drugs (and doses) which may be beneficial? (3 marks)

*Dexamethasone 0.15mg/kg (up to 0.6mg/kg)
Adrenaline Neb 5mg
Pulmicort Neb 2mg*

4. What clinical signs which would prompt admission? (1 marks)

If hypoxaemic (low sats) or in respiratory distress (raised RR, dyspnoea)

Q12.

A thirty-five year old homosexual man presents to the ED with 3 months of a persistent dry unproductive cough. He is accompanied by his partner who is HIV positive and taking medications for TB. The patient's saturations are 93% on air. This is his chest radiograph:



1. Describe the abnormality on CXR. (1 mark)

Cavitating mass in the Left Upper Lobe

2. Apart from TB, what are the other possible diagnoses? (3 marks)

Bronchogenic Carcinoma, Kaposi Sarcoma, Pneumonia/ Lung Abscess, Aspergilloma

3. Name three organisms which cause pulmonary disease in HIV infection (3 marks)

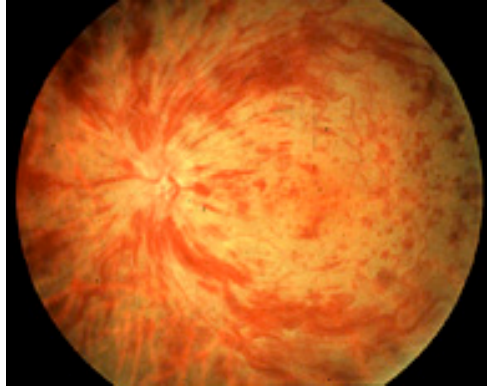
Pneumocystis carinii, Streptococcus pneumoniae, Pseudomonas, Cryptococcus, Aspergillosis

4. What six investigations in the ED, would help with your management? (3 marks)

Lateral CXR, ABG, FBC(CD4), U&E, Atypical Serology, Sputum for AFB, Blood Cultures, Urinalysis, Mantoux Test

Q13.

A sixty eight year old woman presents with sudden loss of vision in her right eye. This is her fundus.



1. Describe the appearance on this picture. (2 marks)

Extensive intra-retinal haemorrhages, dilated veins over fundus, scattered cotton wool spots ("stormy sunset")

2. What six questions would you ask in the history? (3 marks)

Is it painful, Any trauma involved, Speed of onset, Previous eye disease, Headache, Systemic disease

3. What is the diagnosis? (1 mark)

Central Retinal Vein Occlusion

4. What medical conditions are associated with this condition? (4 marks)

Diabetes Mellitus, Ischaemic Heart Disease, Polycythemia, Coagulopathies, Hypertension, Hyperlipidaemia

Q14.

A sixty-five year old man is brought into the ED. He is depressed and wants to die.

1. What questions in the history help to assess his suicide risk? (3 marks)

This is the SADPERSONS Scale:

Sex(male), Age(<19 or >45), Depression or Hopelessness, Previous suicide attempt or Psychiatric care, Excessive alcohol or drug usage, Rational Thinking Lost, Separated, divorced or widowed, Organised attempt, No social support, Stated future suicidal intent

2. What principles of the Mental Health Act are relevant to the Emergency Department (4 marks)

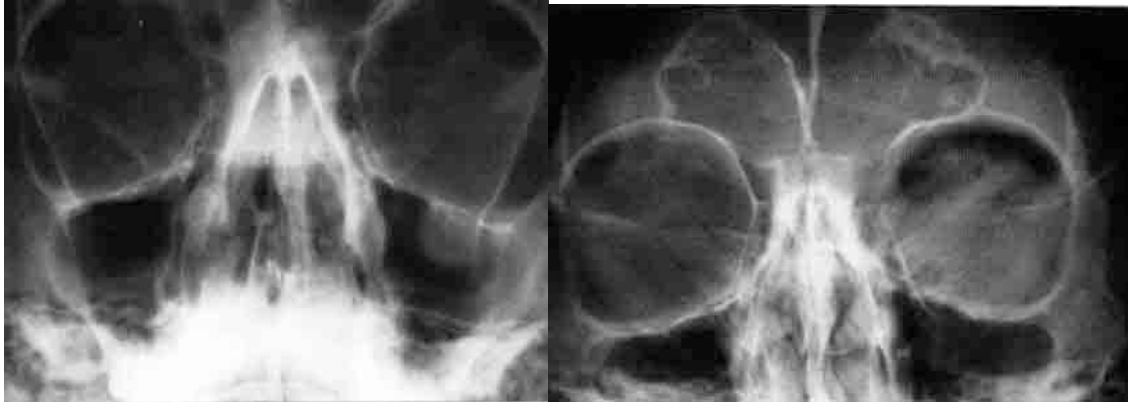
Mental Capacity Act (October 2005): A presumption of every adult to have capacity, right for individuals to be supported in making their own decisions, right to make what might be seen as an unwise or eccentric decision, act in patient's best interests, should be least restrictive of basic rights and freedom

3. What three fold test can be used to determine if the patient can make a this decision? (3 marks)

He understands and believes the information that he is told, and he is able to retain this information and weigh up and make a balanced judgment about the consequences of refusing treatment.

Q15.

This 22 year old man has a cut above his left eye following an assault. These are his radiographs.



1. What abnormalities do you see on his radiographs and what is their significance? (3 marks)

*Fluid level in left maxillary antrum-suggests antral wall fracture
Left Tear drop sign- prolapse of infraorbital extraocular muscles
Left eye brow sign- Free gas in orbit due to infraorbital floor fracture*

2. What four features would you look for on clinical examination of the orbital contents? (4 marks)

Visual acuity and visual field,, Different resting pupil level as well as inability to look up, Proptosis or Enophthalmos, Fundoscopy

3. How would you manage the patient, if he can only be seen in specialty clinic the next day? (3 marks)

Offer analgesia, Clean/Close laceration over left eye (after checking no FB, if suspected), Give antibiotics, and advise not to blow nose.

Q16.

This 14 month old boy fell. He weighs 10.5kg. This is the radiograph of his right side.



1. Describe the radiograph. (1 mark)

Grossly displaced supracondylar fracture of right humerus

2. Give two neurological structures which might be damaged. (2 marks)

Median and Ulnar Nerves, both motor and sensory branches

3. What drug would you give for analgesia? State dose and route (2 marks)

Intravenous Morphine 1.05mg or Intranasal diamorphine same dose

4. Name three joint injuries and their associated nerve and vascular injury. (3 marks)

Shoulder Dislocation-Axillary nerve and brachial artery

Hip Dislocation- Sciatic Nerve Injury and AVN Femoral Head

Knee Dislocation-Peroneal Nerve Injury and Injury to Popliteal Artery

Ankle Dislocation-Peroneal and Saphenous Nerve Injury and AVN of talus.

5. What three clinical requirements are needed to clear a C-Spine? (2 marks)

No neurological signs or symptoms, Ability to turn head >45 degree laterally with no pain, in a fully conscious sober patient with no other distracting injuries and age less than 65.