

The Prince Charles Hospital



The Prince Charles Hospital Emergency Department

ACEM Fellowship Trial Examination

2015.1

Short Answer Questions (SAQs)

Examination time: 180 Minutes

Direction to candidates

- 1- All questions must be attempted
- 2- Answer each question in the space provided.
- 3- Enter your name for each question.

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SAQ 1:

Candidate name:-----

You are the consultant on duty and you have taken over the care of a 23 year old woman who has been intubated and ventilated for a polypharmacy overdose.

Her vital signs post intubation are:

HR 130
BP 100/70
Sats 92% on 50%
RR 16
Temp 35.6
ETCO2 52

Questions:

1. List 6 possible causes for her tachycardia and describe one distinguishing historical feature for each (12 marks)

Possible causes	Historical features



2- Your Ventilator settings are as follows :

Volume control ventilation:

TV 280

Rate 16

PEEP 5

I:E ratio 1:3

List 2 unsatisfactory parameters with her ventilation and suggest 2 changes you would make to these settings to improve her ventilation. (6 marks)

Ventilation parameters	Changes suggested

3. Give 4 reasons (unrelated to her ventilator settings) why her ETCO₂ may be high and give one example of each. (8 marks)



SAQ 2:

Candidate name:-----

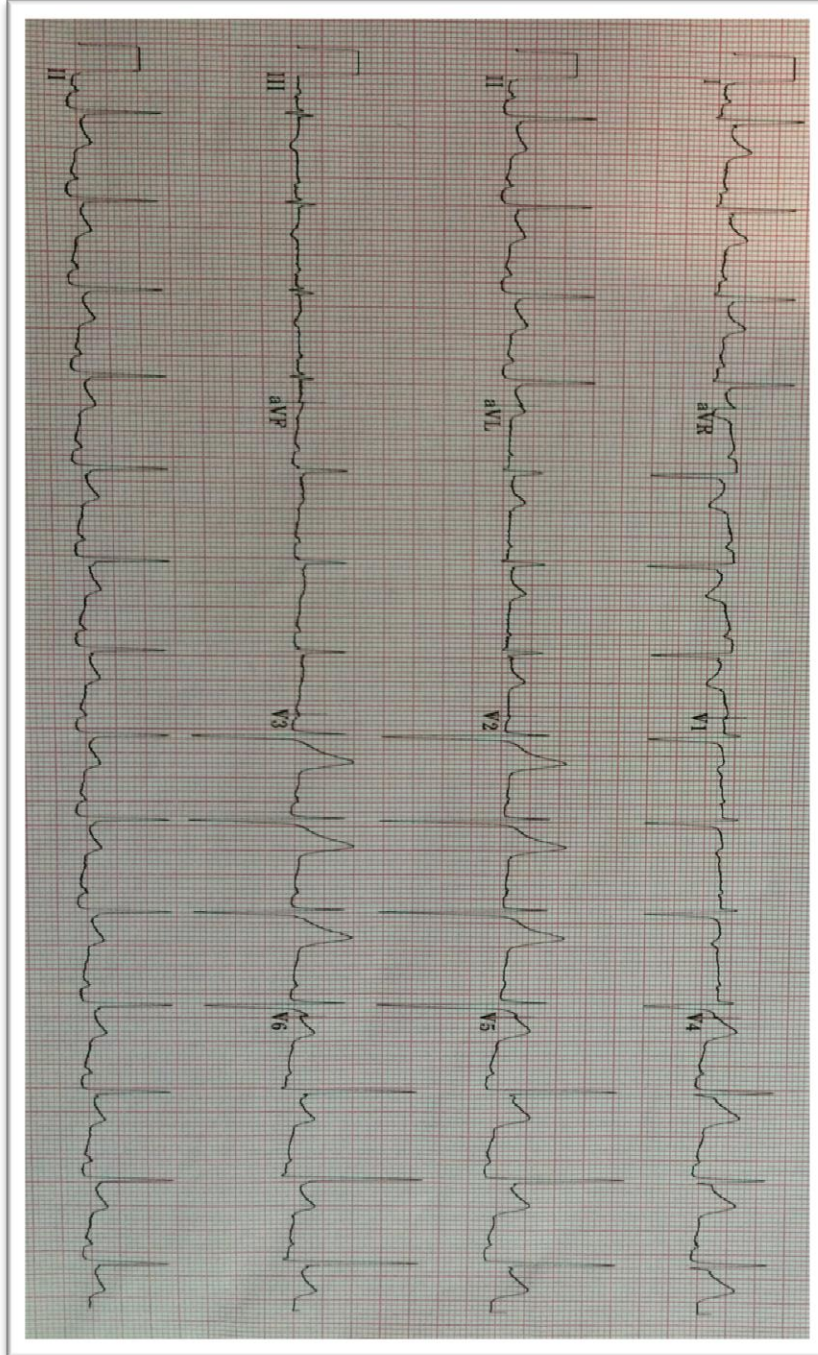
A 30 year old female presents to ED with intermittent Chest pain for 2 days. She has pain with deep inspiration. She has no other associated symptoms. She has been well until this illness.

She has no known medical conditions.

Her vital signs are:

GCS	15/15
BP	110/77
RR	26
SpO2	97% in room air

The patient's ECG is reproduced.





Questions:

1- List the abnormalities on the ECG.

(3 marks)

2. What is your provisional likely diagnosis? Justify your choice.

(3 marks)

3. List 3 additional investigations that are indicated to further assess the extent and severity of this condition.

(3 marks)



4. In the table below, list the possible underlying aetiological processes causing this patients condition. Give 1 example of each and list the relevant investigation that could be ordered. (12 marks)

Aetiological process	Example	Relevant investigation



SAQ 3:

Candidate name:-----

A 21 year old aboriginal lady presents with a 24 hour history of a sore throat and difficulty swallowing. She has a muffled voice and appears anxious.

Her observations are:

HR 100
BP 110/65,
RR 28
Sats 98% RA
Temp 39 Deg C.

A lateral soft tissue neck X-ray is performed which is shown below.





Questions:

1- What are the significant findings on this X-ray?

(4 marks)

2- List 4 likely organisms that cause this condition in this patient.

(4 marks)

3- List 5 immediate treatment priorities in the ED?

(5 marks)



SAQ 4:

Candidate name:-----

A 2 year old boy presents to your ED with fever and drowsiness after being left unattended for 30mins in a locked vehicle.

Her vitals signs are:

HR 150
BP 70/35
Temp 41 C
RR 48
Sats 95%

1. List 5 possible differential diagnoses. (5 marks)

2. List and justify 6 investigations you would perform in ED in this patient. (6 marks)



3. Outline your approach for cooling this patient in the ED.

(8 marks)



SAQ 5:

Candidate name:-----

A 60 year old male is brought to your Emergency Department following an intentional overdose. The ambulance crew report that he has ingested 25 Diltiazem XR 180mg tablets 5 hours ago.

His vital signs are:

HR	60	Sats	99% RA
BP	120/67	Temp	36.7 °C
RR	20	BSL	6.4

Questions:

1- List 4 factors associated with significant toxicity following calcium channel blocker poisoning?

(4 Marks)

2- List 4 clinical features that may occur with significant calcium channel blocker toxicity.

(4 Marks)



3- Several hours later the patient becomes agitated and clammy. He is being managed in a Resus area with non-invasive monitoring.

His vital signs now are:

BP 87/40
HR 40
Sat 93% on RA
GCS 15/15

List in a step-wise approach your management of this patient. (8 Marks)



SAQ 6:

Candidate name:-----

A 2 month old baby presents to your ED with vomiting that has markedly increased in number and volume in the last few days. He has been investigated in the community for cow's milk protein allergy.

He was born at 3800g and now weighs 4300g.

His vital signs are:

HR	160	BP	60/40
RR	46	Temp	36.5
Sats	95% RA		

1. List 8 Differential Diagnoses for this presentation (8 marks)



2. A VBG is performed as part of his workup:

pH	7.5
Pco ₂	52.8
Po ₂	33
Lac	1.8
HCo ₃	42
Hb	116
K	1.8
Cl	95
Na	143
Ca	1.28
Glucose	6.3

Describe 3 key abnormalities of the VBG and briefly comment on the possible cause of each. (6 marks)

Metabolic abnormality	Possible cause

3- What is the most likely diagnosis and explain why. (2 marks)

4- List and justify 3 further investigations required for this baby: (6 marks)



SAQ 7:

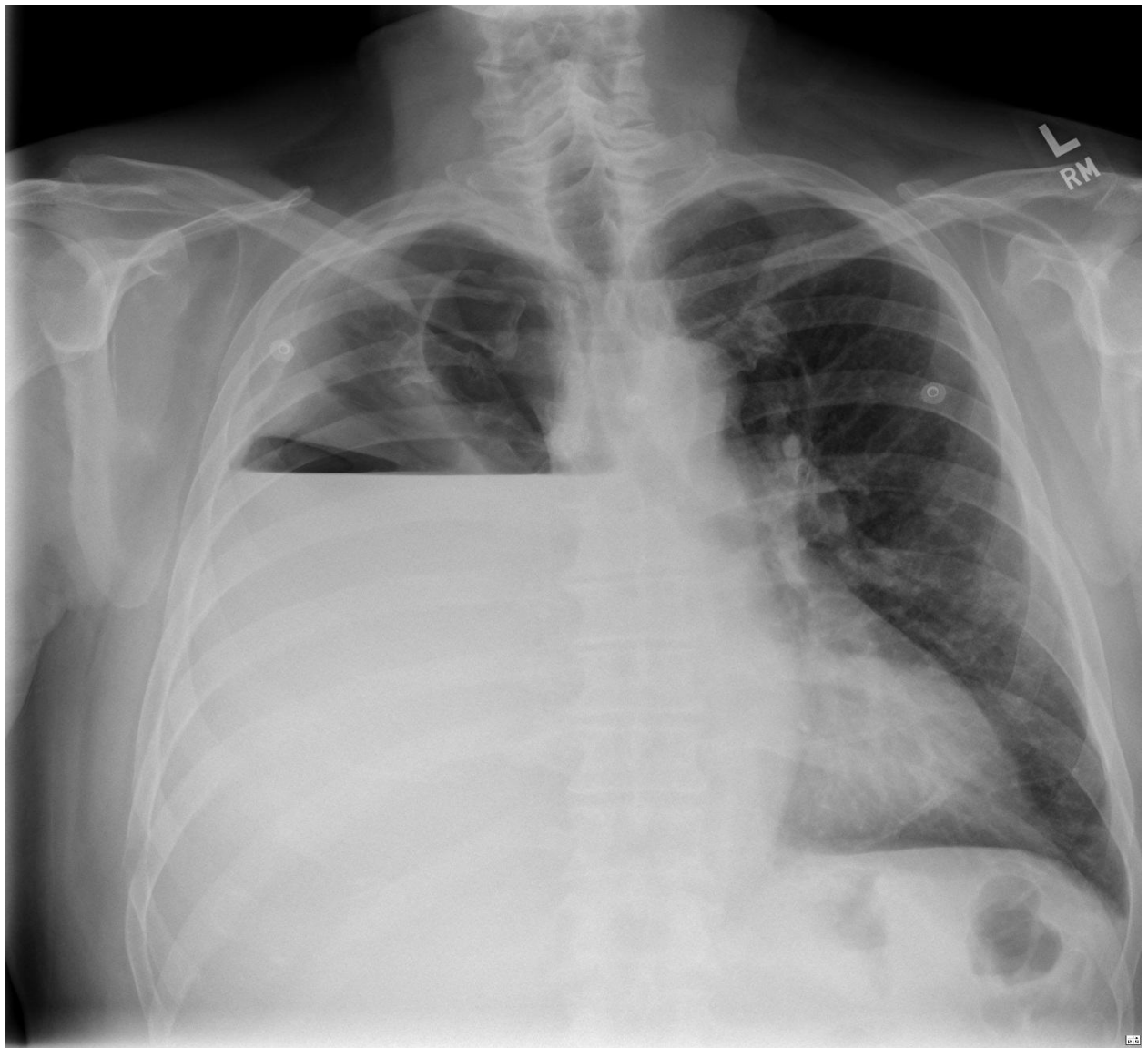
Candidate name:-----

A 75 year old male with a history of lung cancer is brought to your Emergency Department by ambulance complaining of worsening dyspnea for 2 days.

His vital signs are:

HR 120, SR
BP 95/55
SaO₂ 88% on 4L Nasal prong oxygen
Temp 37.5
GCS 13/15 (E4M5V4)

A mobile chest X-ray is performed:





Questions:

1. List 3 relevant positive and 2 relevant negative findings on this CXR. (5 Marks)

POSITIVES:

Negatives:

-
2. In point form, describe the immediate management priorities in this case (3 Marks)

3. List the parameters needed to help distinguish between a transudate and an exudate pleural effusion in general? (4 marks)



SAQ 8:

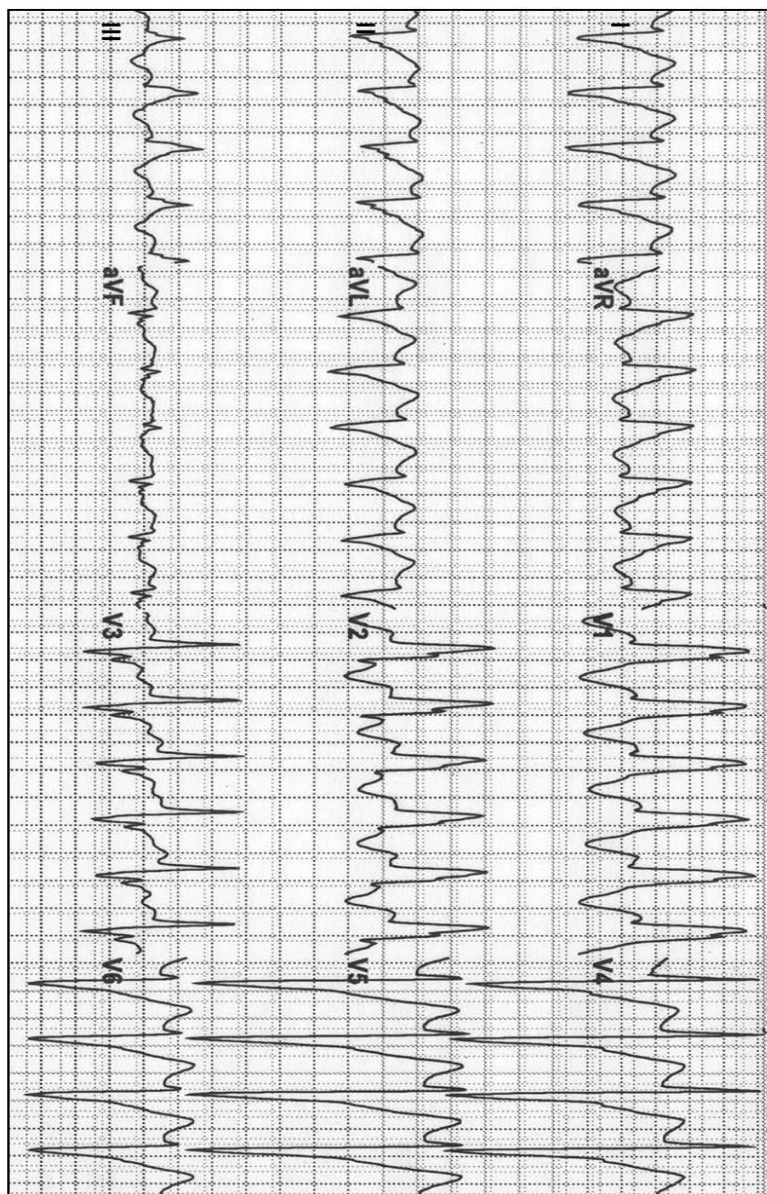
Candidate name:-----

A 68 year male presents to ED with an episode of severe central chest pain and palpitations for the last 20 min. He has no prior medical history.

His vital signs include:

GCS 15/15
BP 110/66
SpO2 95%
RR 20

His ECG is reproduced for review:





Questions:

1. What is your interpretation of the ECG and state your evidence. (5 marks)

2. What is the likely anatomical origin of the abnormality? (1 mark)

3. What initial treatment would you give this patient in ED? INCLUDE DOSE AND ROUTE. (5 marks)



SAQ 9:

Candidate name:-----

A 58 year old female is brought in to ED after being found by her husband collapsed in the shower.

Her vital signs on arrival are:

HR 80

BP 180/120

RR 20

GCS 8/15 (E2 V2 M4)

She is immediately intubated prior to CT scan, which has been reproduced below:





Questions:

1-List the radiological abnormalities on the above scan. (4 marks)

2- List your immediate management priorities in this patient: (10 marks)

3. What criteria would you use to estimate this patient's likely prognosis. (4 marks)



SAQ 10:

Candidate name:-----

A 60 year old male presents to your ED with a 4 hour history of severe vertigo, which he describes as like the room is spinning. He has vomited multiple times and feels unsteady on his feet. His vital signs are within normal limits.

Questions:

1- List 4 peripheral & 4 central causes of vertigo. (8 marks)

Peripheral	Central

2- List 5 features on examination that would be suggestive of central vertigo. (5 marks)

3- List and justify 3 investigations that could be arranged from the ED to distinguish between central and peripheral causes for vertigo. (6 marks)

Investigation	Justification



SAQ 11:

Candidate name:-----

A 59 year old wheel chair bound paraplegic presents with chest pain and SOB.
He has a history of clipped Circle of Willis aneurysm which was done 6 years ago.
He does not have a headache. A CTPA confirms he has a massive PE.

His vital signs are:

GCS 15/15
HR 114
BP 87/39
RR 24
SaO2 97% with O2 15 L/min via non re-breather mask

Questions:

1- List 8 sequential steps in the management of this patient? (8 marks)

2-Briefly describe 3 ethical and medico-legal issues in this situation (3 marks)



SAQ 12:

Candidate name:-----

A 50 year old homeless alcoholic man has received 40% full thickness burns to his torso and upper limbs after a fire in his bedding. He appears intoxicated currently and is struggling to breathe. There is a suggestion the fire may have been deliberately lit.

His vital signs are:

HR	110	Sats	93% on 15L Oxygen
RR	38	BP	100/55
Temp	36.5		

Questions:

1. List 7 potential complications of this burn and describe the key management option for each. (14 marks)

Complication 1: -----

Management option:-----

Complication 2: -----

Management option:-----

Complication 3: -----

Management option:-----

Complication 4: -----

Management option:-----

Complication 5: -----

Management option:-----



Complication 6: -----

Management option:-----

Complication 7: -----

Management option:-----

2. You are preparing to do an escharotomy of the torso when your resident asks whether the patient needs to consent to the procedure.

List the principles of consent that apply in this situation. (3 marks)



SAQ 13:

Candidate name:-----

A 40 year old female patient is brought to your tertiary Emergency Department following a fall from 4 meters, where she landed heavily on her feet.

Her vital signs are:

GCS 15/15

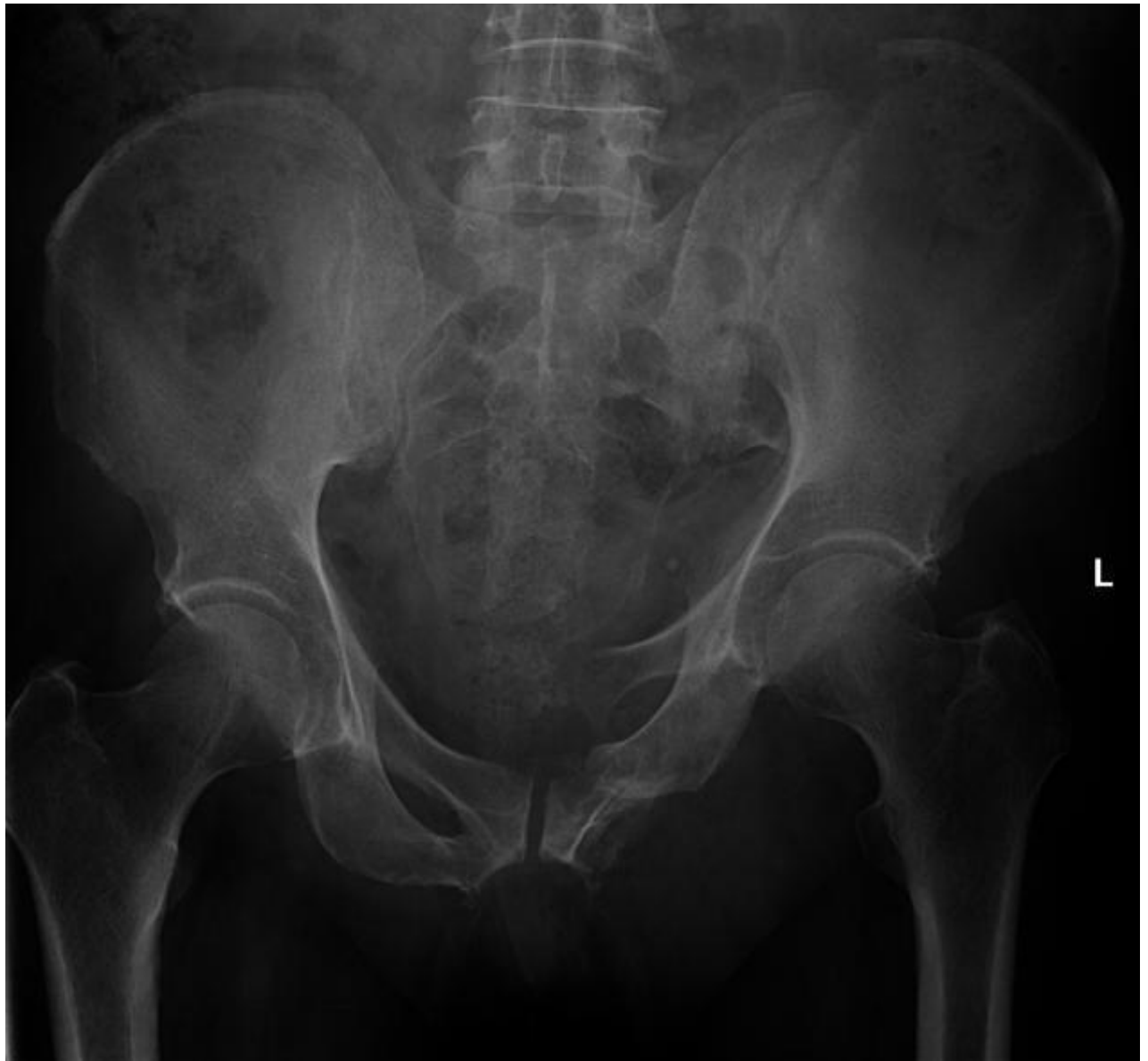
RR 24

HR 100

BP 115/50

SaO₂ 99% on 6L O₂ via face mask

Her pelvis X-ray is attached:





Questions:

1-Classify the radiological abnormality & state the findings that support this. (3 Marks)

2-List 5 possible complications of this injury in this patient. State how you would assess for these in the ED. Complete the table below. (10 marks)

Complication	Assessment



3- List 2 alternate options for further management for this patient's pelvic injury.
(2 Marks)

4- List 5 factors which may affect your choice in the above management options.
(5 Marks)



SAQ 14:

Candidate name:-----

A 35 year old woman presents to your ED with a short duration of illness characterised by fevers, headache and photophobia.

Her vital signs on arrival are:

HR	95	BP	120/60
RR	18	Sats	96% RA
Temp	39		

Questions:

1. List 5 key examination findings that may support a diagnosis of meningitis. (5 marks)

2. Lumber puncture is required as part of this patient's workup, Describe in a stepwise fashion this procedure (in point form) (7 marks)



3. The results of your LP are as follows.

CSF:

WCC 700 (predominance polymorphs)
RCC 15
Protein 1.0
Glucose 2.0 (Normal range > 2.5 mmol)
Gram stain +ve for bacteria

Describe the key features and interpret (3 marks)

4. List 3 additional tests that need to be performed on the obtained CSF:

(3 marks)



SAQ 15:

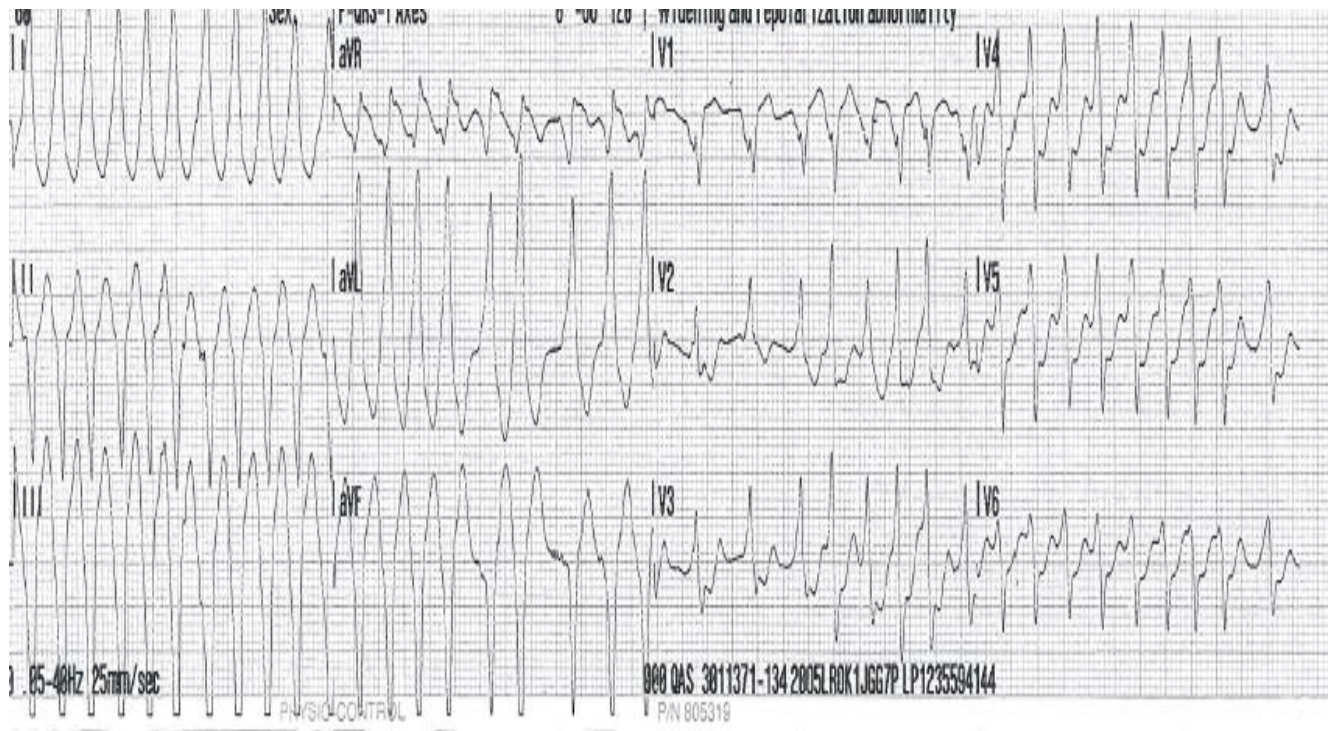
Candidate name:-----

A 50 year-old woman is brought into your Emergency Department by ambulance complaining of palpitations for the last 30 minutes. She takes no regular medications and is unaware of any significant medical history.

Her pre-hospital vital signs are:

GCS 15/15
BP 110/60
SpO2 98% on RA
Temp 36.2

Her pre-hospital ECG is provided:



Questions:

1- What is the diagnosis and list 4 supportive ECG finding: (5 marks)



2- In point form, List your management steps. For any drugs used, please provide the dose and route of administration. (8 marks)



SAQ 16:

Candidate name:-----

A 32 year old , 28 week gestation female is brought in to your tertiary Emergency Department following a Motor Vehicle Accident.

Her vital signs are as follows:

HR 110
BP 90/60
GCS 15
Temp 36.8
SaO2 97% on room air

Questions:

1-In your initial ED assessment of this patient, list 5 conditions specific to trauma in pregnancy that you would be trying to exclude? (5 Marks)

2- Briefly outline 5 potential uses for ultrasound in the ED in this patient and how pregnancy may limit its utility. (4 Marks)



3- She starts to show painless bright red heavy PV bleeding just after her arrival in the ED. Outline your initial 6 steps in the management of this patient in the ED. (6 marks)



SAQ 17:

Candidate name:-----

A 45 year old man presents to the ED with a painful Left shoulder after falling onto his outstretched arm. He is lying most comfortably on a bed with his arm abducted above his head.





Questions:

1- What do the images show?

(2 marks)

2- List 3 complications associated with this injury

(4 marks)

3- Briefly explain how you would treat this injury

(4 marks)



SAQ 18:

Candidate name:-----

A 19 year-old man presents to the ED with 12 hours of unilateral testicular swelling and pain.

Questions:

1-List 4 differential diagnoses for this presentation. For each diagnosis, list two key features (either historical or on examination) that may help distinguish that diagnosis. (12 marks)

Diagnosis	Features

2- You phone the surgical registrar on call to request that he review the patient urgently in ED. The surgical registrar states he will not come to review the patient until you have the results of an ultrasound of the testes.

Briefly describe your approach to this situation. (5 marks)



SAQ 19:

Candidate name:-----

A 23 year old woman with anorexia nervosa presents to your ED with weakness and vomiting for the past 2 weeks. She weighs 35kg.

Her vital signs are:

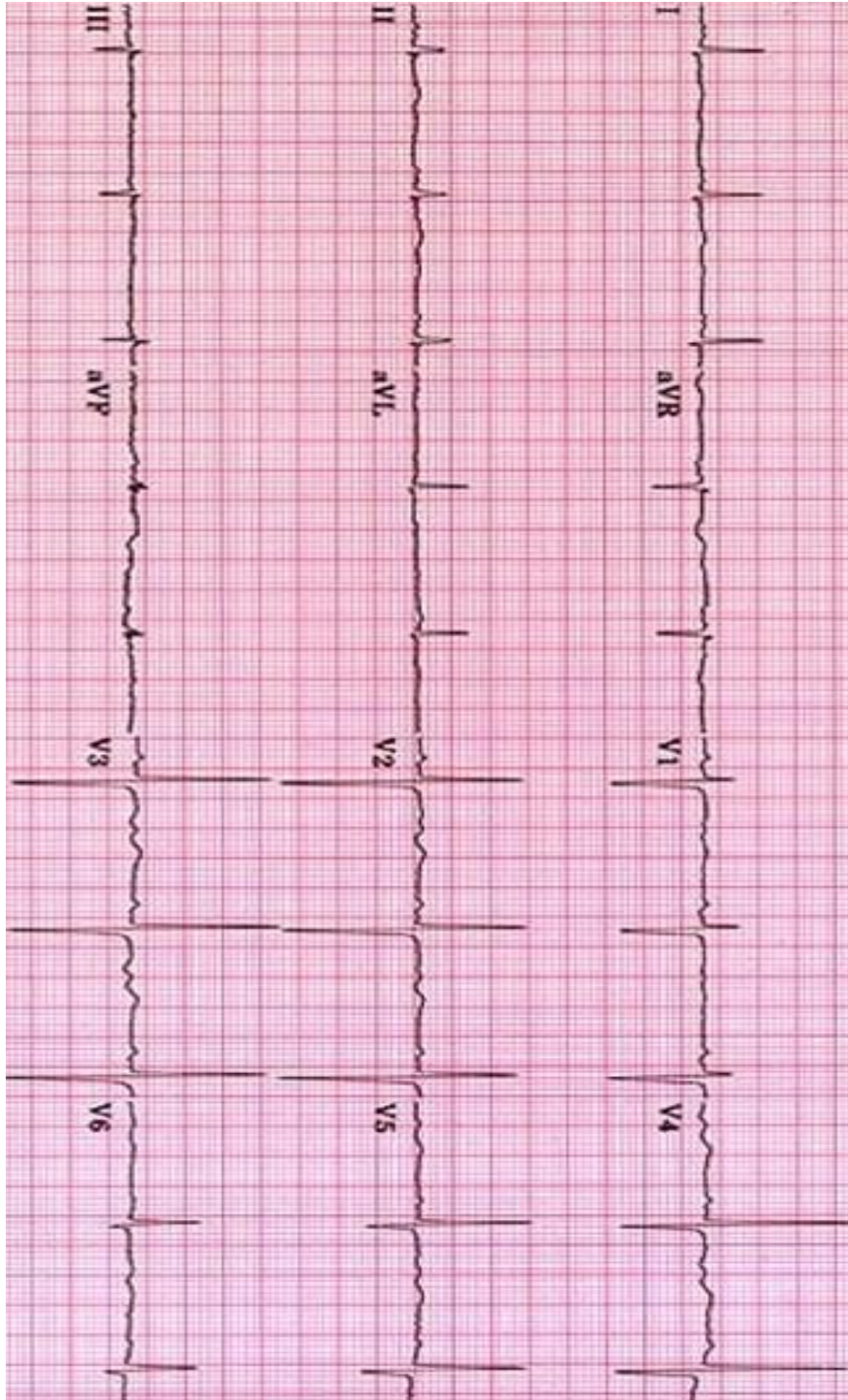
BP 80/40

RR 12

Temp 34.9 C

Sats 95% on RA

1. Her ECG is reproduced for review. What is the most likely diagnosis and provide supporting evidence. (5 marks)



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2. Describe 6 management steps for the above patient including any drugs required: (6Marks)

3. List the potential ethical and legal pitfalls that could be anticipated in the management of this patient: (2 marks)

4. List 6 common physical symptoms that a patient with anorexia nervosa may present with to the ED. For each list one potential underlying cause. (12 marks)

Symptoms	Reasons



SAQ 20:

Candidate name:-----

An 18 month old boy is brought into your ED by his parents with a rash to his face. The rash has been there for a few days and has been worsening. He has had a reduced oral intake and mum states that he has 'felt hot'.

He is fully immunised and has a background history of atopy.

His vital signs are:

GCS 15/15

HR 130 bpm

CRT <2sec

Temp 37.8

Below is a picture of the rash:



Questions:

1- Describe the features of the rash

(4 marks)



2- What is the most likely diagnosis? List two other alternative diagnoses. (3 marks)

3- List 4 management priorities for this child (4 marks)



SAQ 21:

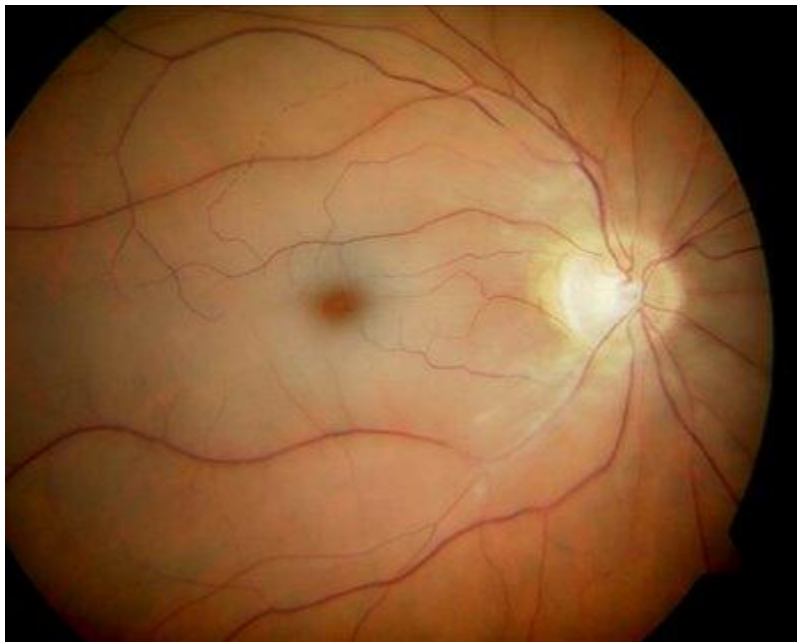
Candidate name:-----

A 30 year old woman with a history of IVDU has presented to your ED with a presenting complaint of anxiety and states she cannot see out of her right eye.

On further questioning, the visual loss has been there for a number of hours and is painless.

Eye examination is normal externally with no redness of the eye and normal eye movements. She can count fingers only on the right eye with 6/60 vision.

Fundoscopy reveals the below picture.



Questions:

1. State the most likely diagnosis and give justification from the photo and the stem (4 marks)



2- In point form, list your management priorities of this patient's presentation: (4 marks)

3- In the table below, list 8 other common causes of acute visual loss (unrelated to this patient) and give one distinguishing historical feature of each (16 marks)

Causes of visual loss	Historical features



SAQ 22:

Candidate name:-----

A 70 year old female presents to ED with a history of 'falling over at the shops' one hour previously. She has a history of previous ischemic heart disease. She admits that recently she has become severely short of breath when walking to the bus stop 20 meters from her home. Her current medications include aspirin and atenolol.

Her vital signs are:

BP 96/66

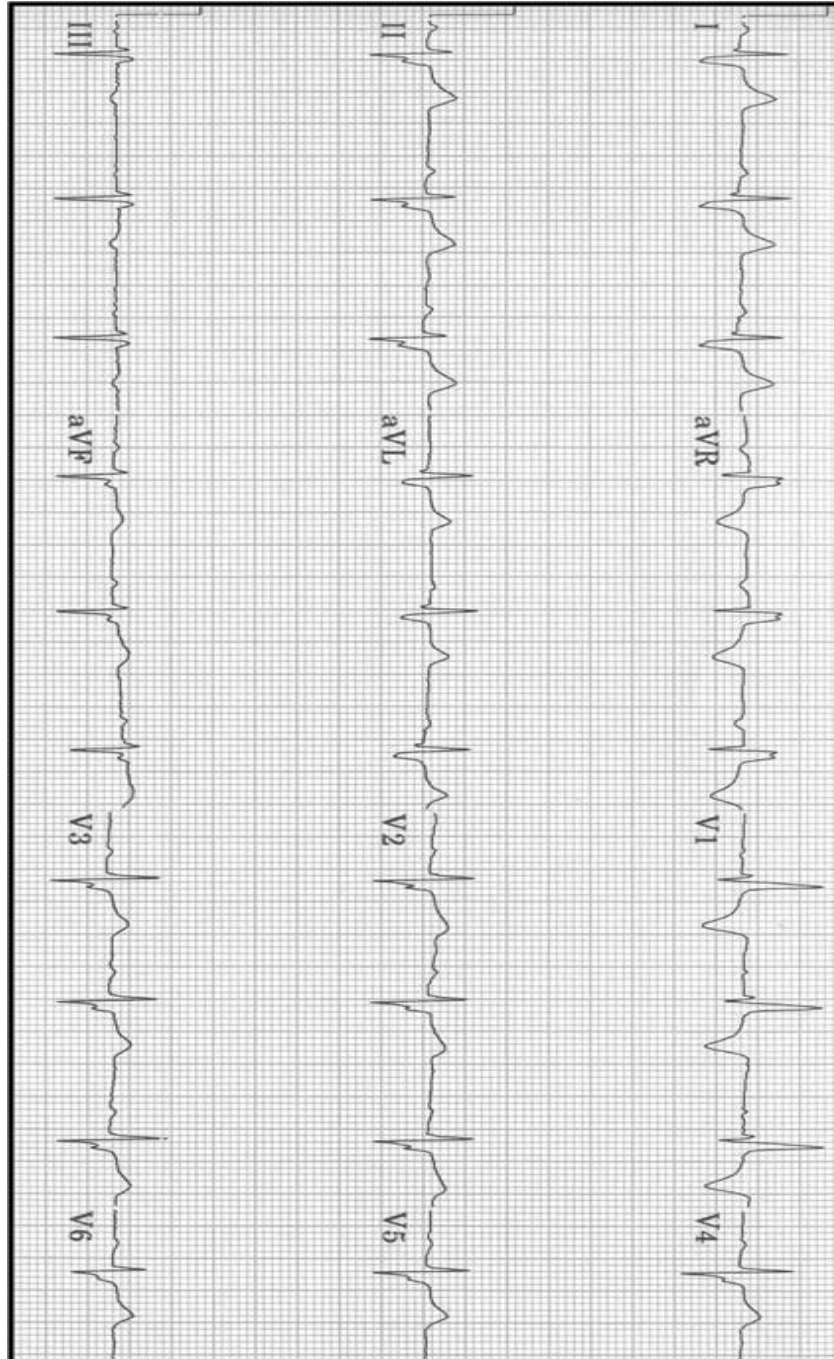
SpO₂ 92% in room air

Temp 37 C

RR 26

She has bipedal pitting oedema to her ankles and bibasal crepitations on lung auscultation.

Her ECG has been reproduced for review:





Questions:

1-Describe the abnormalities on her ECG. (2 marks)

2- What is the significance of these findings? (2 marks)

3-List 4 causes contributing to the findings on the ECG. (4 marks)

4- What definitive cardiac investigations does this patient need and state why? (3 marks)



SAQ 23:

Candidate name:-----

An 8 year old boy is brought into your ED by his mother after having fallen off the trampoline onto his out-stretched arm. He is crying, with an obvious deformity to his arm.

There are no other injuries.

He has had an urgent X-ray arranged by the triage nurse.





Questions:

1-Describe the abnormalities in the X-ray above. (4 marks)

2- List three analgesic options you could use in this case, including doses and routes of administration. (6 marks)

3- List three complications of this injury which should be sought in the ED and the clinical features associated with these complications. (6 marks)

Complications	Clinical features



SAQ 24:

Candidate name:-----

A 63 year old male patient presents to your ED complaining of fever of 38 degrees measured at home today. He last had chemotherapy for Non-Hodgkin lymphoma 8 days ago. He has an indwelling central venous catheter in situ. He has no other symptoms.

His vital signs are:

HR 110
BP 100/80
SaO2 98% Room air
GCS 15
Temp 38.6

His initial Full Blood Count is as follows:

Hb 97 g/dL
MCV 85
Plt 12
WCC 0.4
Neut 0.02

Questions:

1- List & briefly justify 5 additional tests you would perform in the ED in this case. (10 Marks)



2- State your antibiotic choice/s and doses in this case where no source can be identified. The patient has no known allergies and normal renal function.

(3 Marks)

3- The patient's blood pressure drops and is unresponsive to fluid resuscitation. He requires inotropes to maintain an adequate MAP and local practice is to use central venous access. His indwelling line is now unable to be successfully accessed.

Outline 6 strategies you would use to minimize potential complications of central venous line insertion in this patient. (6 Marks)



SAQ 25:

Candidate name:-----

Your junior doctor has just reviewed a 61 year old man who has re-presented to the ED requesting further medications to treat his anxiety and depression. This is his third presentation to the ED with a 3 month of dyspnoea, weakness and weight loss.

He had most recently been discharged by another ED registrar 2 days ago with a prescription for Diazepam. The junior doctor was concerned that the patient appeared pale and did routine bloods.

His observations are:

HR 80 bpm,
 RR 22 bpm,
 Sats 98% RA
 BP 130/58 mmHg,
 Temp 37.8 Deg C

These are the results of the FBC:

Differential	Result	Normal range
WCC	2.9	4.0 – 11.0 x 10 ⁹ /L
Hb	61	135 – 180 g/L
Plt	37	140 – 400 x 10 ⁹ /L
RBC	2.04	4.5 – 6.0 x 10 ¹² /L
MCV	84	80 – 100 f/L
Neut	0.12	2.00 – 8.00 x 10 ⁹ /L
Lymph	1.44	0.10 – 4.00 x 10 ⁹ /L
Mono	0.15	0.1 – 1.00 x 10 ⁹ /L

Questions:

1- What is the significant finding on his FBC? (1 mark)

2- List 5 possible causes of the above finding (5 marks)



3- List 5 investigations that would assist with your diagnosis in the ED and briefly state why. (10 marks)

4- Your director requests you to provide feedback to the Registrar regarding this case.

List the steps involved in this process. (5 marks)



SAQ 26:

Candidate name:-----

You receive a phone-call from the nurse at triage. There is a 34 year-old woman at triage who has just walked in stating she feels 'feverish and generally unwell'. The patient returned from Liberia in Western Africa five days ago where she was visiting family and she is concerned she may have the Ebola virus.

Questions:

1- What immediate steps will you take to assess this patient safely in your ED?

(5 marks)

2- List five differential diagnoses for this patient and for each one name the investigation of choice to exclude or confirm the diagnosis. (10 marks)

DDX	Investigations (to exclude or confirm Dx)

3- The patient is appropriately managed in your department. The triage nurse states to you that she felt under-prepared for dealing with this specific patient. List three strategies you could employ to further educate the department.

(3 marks)



SAQ 27:

Candidate name:-----

A 57 year old homeless man is brought to ED with shortness of breath. He has a history of alcohol and drug abuse, with frequent ED presentations for violent altercations whilst intoxicated.

His vital signs include:

HR	135
BP	180/110
Temp	37.8 C
SpO2	90 % in room air
RR	26

He is agitated, aggressive and diaphoretic. He has dilated pupils bilaterally, but no focal neurology. He has mild epistaxis from excoriated, inflamed nares. He appears cachectic. He has impetigo in multiple sites.

His CXR is reproduced for review.



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Questions:

1- Describe the significant abnormalities on this CXR. (2 marks)

2- List 4 important negative findings on this CXR. (4 marks)

3- List 5 conditions in your differential diagnosis. (5marks)

4- List 5 investigations this patient will require to further refine the diagnosis and provide your justification for each. (10 marks)

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SAQ 28:

Candidate name:-----

A 40 year old known schizophrenic patient presents to your ED by ambulance on an involuntary order. He had been behaving erratically at a train station. Whilst waiting to be seen he absconds from the ED and is unable to be located by ED staff.

Questions:

1-Outline your 5 immediate steps in managing this situation (5 marks)

2-List 6 features that would make this patient at high risk of self harm. (6 marks)



3- A few hours later the patient is returned to the ED by police. On arrival he is behaving aggressively and is resisting being moved into a treatment cubicle.

List 3 options for chemical restraint, including doses and endpoints of treatment.
(7 marks)



SAQ 29:

Candidate name:-----

You are the day shift ED consultant arriving to receive departmental handover at 8am. Your ED has 12 acute monitored beds and a SSU that has 6 beds.

The senior nurse informs you that there are 5 patients admitted to the SSU by the ED Night Registrar that all have ongoing abnormal vital signs. She is concerned about the suitability of these patients for short stay care.

Questions:

1- List 8 steps in your approach to managing this issue. (8 marks)

2- In light of this incident, your director asks you to develop a set of exclusion criteria for the Short Stay Unit. List your criteria. (8 marks)



SAQ 30:

Candidate name:-----

A 45 year old man presents to your rural ED with pain, weakness and paraesthesia in the left arm that is worsened by abducting his arm. On examination he has weak pulse on that side.

His vital signs are:

HR 110 irregular
RR 16
Afebrile

BP 130/80
Sats 96% on RA

Questions:

1. List 5 differential diagnosis for this presentation (5 marks)

2. List 5 investigations and justify each one of them: (5 marks)

Investigation	Justification



3. Your investigation suggested that the cause related to his arrhythmia, in point form, list your management priorities (5 marks)

GOOD LUCK