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Question 1 (18 marks)

Soon after arriving for morning handover, you are asked to assist with a 68 year old previously independent female who presented 90 mins ago with septic shock thought to be urinary related. She has a past medical history of severe Rheumatoid Arthritis, Congestive Cardiac Failure and Chronic Renal Failure and her regular medications include: Methotrexate 10 mg weekly Prednisolone 5mg daily and Frusemide 20 mg mane.

The patient has received appropriate antibiotics and 1.5 L of intravenous fluid but remains hypotensive.

Her current vital signs in the resuscitation room are:

GCS	14 (confused)
HR	108 bpm
BP	80/50 mmHg
SaO ₂	86 % on 15L oxygen via NRM
RR	34

The team feels she requires intubation to facilitate further management.

Part a (6 marks)

Outline 6 factors that would influence your decision on the timing of intubation for this patient?

Model Answer

Prioritises medical optimisation (oxygenation, haemodynamic support) before intubation

- Indicates that patient needs to be resuscitated prior to induction/intubation Identifies variables that would impact timing of intubation
 - Presence of airway threats to patency
 - Conscious state, agitation,
 - Fatigue ventilatory drive/adequacy
 - Response to therapies given to date
 - Efforts made to optimize patient to date and room for further optimization/resuscitation
 - Team readiness/ availability of back up, determination of intubation strategy
- Absolute indications: Apnoea or loss of airway patency (ie recurrent vomiting, non-clearance of secretions, cardiac arrest)

identifies optimal situation eg Sats >90%, SBP >90

answers need to Identify important variables impacting timing of intubation with at least one

- Example of an airway threat
- Example of worsening ventilation o Immediate indication

Part b (4 marks)

You decide to intubate the patient. The vital signs are unchanged.

Outline 4 strategies that address the anatomic challenges present in intubation

Model Answer

For Impaired neck mobility/ risk of harm from manipulation of neck in patient with RA/limited mouth opening:

- Use of hyper-angulated blade,
- patient position (ie ear to sternal notch, pillows etc),
- video laryngoscope
- use of external laryngeal manipulation/BURP Inability to lie flat (APO):
- Induce in sitting position
- use of CPAP, bilevel PAP as strategy for preoxygenation

Part c (8 marks)

Outline eight (8) treatment strategies that address the physiologic challenges present in intubation

Model Answer

Pre-oxygenation: Continues NIV or assisted BVM throughout apnoeic period

Avoidance of desaturation: Active oxygenation throughout intubation with high flow nasal oxygen

Hypotension: need to adapt standard RSI treatments specific to identified severe abnormalities in circulation

Reduced dose induction agent

Choice of induction agents safe for septic shock – ketamine and/or fentanyl

Push-dose or infusion of vasopressor/inotrope (adrenaline or metaraminol) at induction for haemodynamic support

Steroid Supplementation (IV Hydrocortisone) given long-term steroids

Acidosis: Ventilates through induction to avoid worsening acidosis Risk of Hyperkalaemia: Avoids suxamethonium

Pulmonary Oedema:

Use of PEEP, NIV to improve oxygenation (may be covered in b) avoidance of additional fluids

Question 2 (12 marks)

A GP refers a 7 month old baby with a right sided parietal subgaleal haematoma, confirmed on U/S, for an opinion and ongoing management. The parents are not aware of any trauma, but had just noticed a soft lump on the right side of the head. The baby is otherwise well. and has not been vomiting.

Part a (6 marks)

List six (6) features you would enquire about in your clinical history taking.

Model Answer

- No history to account for the injury
- History of unwitnessed trauma
- History of family violence
- Mechanism incompatible with the child's age or developmental capabilities
- History does not easily account for the findings
- Inconsistent or changing histories without reasonable explanation
- Unreasonable delay in seeking medical attention
- Any injury in a non-ambulatory infant
- History of another child causing significant injury
- Certain injuries with high specificity for abuse eg ear bruising, posteromedial rib fractures, scald pattern suggesting immersion
- An infant with an unexplained encephalopathy (suspect abusive head injury and/or poisoning)
- Child or young person has problematic or harmful sexual behaviour

Part b (6 marks)

List six (6) examination findings you would look for.

Model Answer

Skin

- Bruise, soft tissue injury TEN-4FACES P areas
- Bruising in TEN location (Torso, Ear, Neck) in child <4years-old
- Any bruising in child <4-6months-old
- Injury to FACES (Frenulum, Angle of jaw, Cheek, Eyelid, Sclera) in child of any age
- Clusters of bruises, strangulation bruising
- Patterned bruises
- Petechiae
- Frenulum injury
- Subconjunctival haemorrhage

Bone

Fractures

- Unexplained
- Multiple # of varying age
- Skull #s
- # in non ambulant child
- Rib fractures

Intracranial injury

- Retinal haemorrhages
- Intracranial collection

Burns

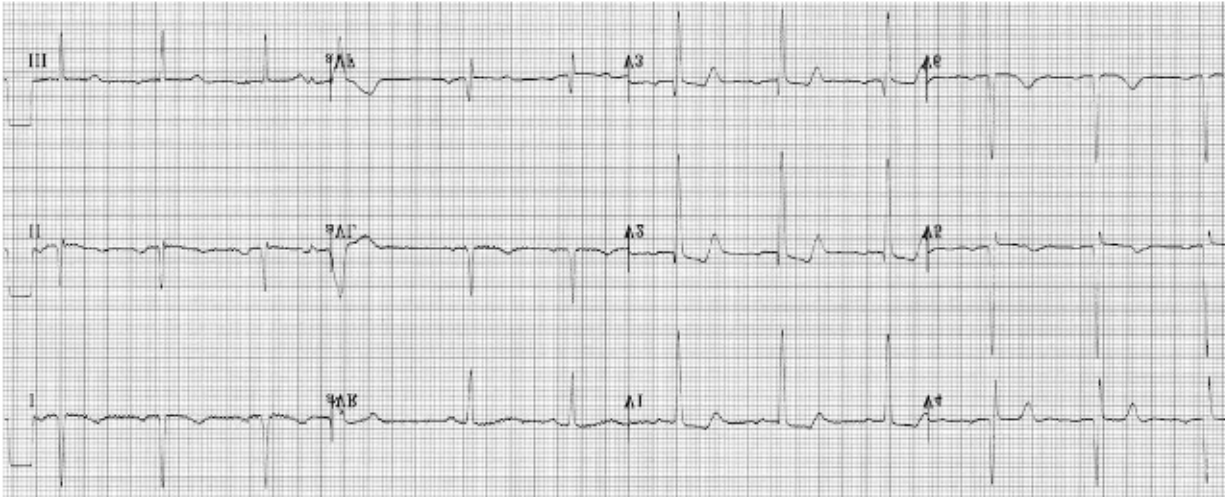
- Immersion, patterned, cigarette
- Genitalia, limb burns

Unexplained encephalopathy

- Head trauma, ingested/poisonings, suffocation

Question 3 (12 marks)

A 55 year old man presents to ED after a resolved episode of chest pain. His ECG is shown.



Part a (3 marks)

List three (3) abnormal findings on the ECG.

Model Answer

- **biphasic T waves V2-3,**
- **LVH**
- **VE**

Part b (1 mark)

What is your diagnosis?

Model Answer

Wellens type A- critical LAD stenosis-reperfusion

Part c (4 marks)

List four (4) differential diagnoses.

Model Answer

- PE/RV strain
- RBBB
- HCM
- Raised ICP
- Normal Paeds
- Persistent juvenile T wave inversion
- Vasospasm/Cocaine
- Brugada

Part d (4 marks)

List four (4) steps in your management of this patient.

Model Answer

- Mx ACS-aspirin/clopid or ticagrelor/heparin
- admit CCU
- urgent angiogram within 24/24 and reperfusion of presumed critical LAD stenosis, emergent if redevelops symptoms

Question 4 (12 marks)

A female patient presents to your emergency department with per vaginal bleeding.

Part a (6 marks)

Complete the table below to list three (3) causes of abnormal vaginal bleeding for each age category.

Model Answer

Reproductive Age	Post Menopausal
<ul style="list-style-type: none">• Pregnancy• Trauma (sexual assault, post coital, FB)• Infection (STI, PID)• Anovulation• Medications (exogenous hormone use)• Lesions (polyps, tumour, fibroids, endometriosis)• thyroid dysfunction	<ul style="list-style-type: none">• Lesions (tumours)• Medications (anticoag, exogenous hormones)• Atrophic vaginitis• Trauma (sexual assault, post-coital, FB)

Part b (3 marks)

You suspect that the patient might have Pelvic Inflammatory Disease. What three (3) essential questions, that have the potential to alter ongoing management, will you ask the patient and why?

Model Answer

1. recent menstrual history – determine the possibility of pregnancy as this has implications for antibiotic choice, and risk of pregnancy complications including ectopic pregnancy
2. any recent sexual assault: has criminal plus psychological implications as well as need for consideration of post-exposure prophylaxis
3. does the patient have an IUD: may need removal in the setting of infection

Part c (3 marks)

On further consideration, you determine that the patient does not have PID but instead has heavy uterine bleeding secondary to anovulatory menstrual cycles. List three (3) specific medications that may be considered for the patient to take at home. (*Doses are not required*).

Model Answer

1. progestin therapy – norethisterone, medroxyprogesterone
2. tranexamic acid
3. NSAID's – mefenamic acid, naproxen, ibuprofen

Question 5 (12 marks)

A 63 year old with no significant past medical history has presented with lower abdominal pain. An abdominal CT has been obtained.



Part a (4 marks)

List four (4) abnormal findings in the CT

Model Answer

- Lateral CT pelvis and abdomen.
- Male patient.
- Large homogenous mass arising from the pelvis.
- Should state that this is clearly the bladder.
- Lumbar osteoarthritis with osteophytes and possible cord or nerve root compression.
- Calcified aorta.
- Possibly enlarged prostate.

Part b (4 marks)

Give four (4) differential diagnosis for this pathology in this patient.

Model Answer

- Prostatic hypertrophy.
- Urethral stricture.
- Drugs.
- Cauda equina syndrome or other neurological cause.
- Bladder tumour.
- Clot retention.
- Calculus in the urethra.
- Constipation.
- Prostatitis or possibly UTI.

Part c (4 marks)

In the most likely situation, if the patient can be discharged, briefly state 4 things that should be done to ensure safe and comfortable discharge.

Model Answer

- Catheter care instructions.
- Spare leg bags.
- Trial of void arranged.
- Urology outpatients arranged.
- Advice about complications to look for and when to return.
- Antibiotic cover.
- Catheter draining well without diuresis.

Question 6 (10 marks)

You receive a pro-notification call, from the ambulance service, about a 5 year old boy who had a drowning episode in a swimming pool nearby to your rural emergency department.

Part a (3 marks)

List three (3) pieces of information you would seek from the ambulance officers?

Model Answer

- Immersion time
- ANY ? or Time to and type of basic life support delivered
- presence of cardiac arrest
- Time to first respiratory effort
- Details of treatment used

Part b (2 marks)

On arrival to the ED, list two (2) predictors of a poor outcome for a drowning patient?

Model Answer

- asystole
- CPR > 25 minutes
- dilated, non-reactive pupils and pH <7.0
- dilated, non-reactive pupils and GCS < 5
- lactate

Part c (3 marks)

The child arrives and he is awake GCS 15 with vitals

HR	90
BP	90/50
Temp	34 °C
Sats	99% on Room Air
RR	20

He looks well and does not have any recollection of what happened.

You have been told that he is a competent swimmer and was found submerged in the water for 2 minutes by his coach during training session in the pool

List three (3) possible causes for his drowning

Model Answer

- neurological event (seizures)
- hypoglycaemia
- cardiac event (arrhythmias and Long QT Syndrome (can name 1 more), HOCM)
- intoxication / drug ingestion
- misadventure/foul play
- inadequate supervision
- trauma

Part d (4 marks)

You decide to admit him to your short stay unit for observation overnight.

Once a sinister cause has been excluded for his drowning, please state four (4) discharge criteria you would consider before discharging him the next day?

Model Answer

- Observed for 8 hours from the time of drowning
- Asymptomatic
- Normal respiratory examination
- SpO₂ ≥95%
- Education about water safety provided (see handout below)
- No ongoing safety concerns
- Referral to social work has been made if deemed appropriate

Question 7 (12 marks)

25-year-old man presents to your ED with neck pain associated with bilateral upper limb paraesthesia. He states that he was in a pool when his friend jumped on to his neck, pushing him into the pool. He then suffered from brief bilateral lower limb weakness followed by pins and needles in his arms, associated with neck pain. The lower limb weakness resolved after a few minutes but the upper limb symptoms persist till arrival to your Regional District ED. He denies taking any recreational drugs but has drunk a few bottles of beer.

His vitals are normal, he has mild tenderness over his mid cervical region in midline and the only abnormalities in his examination are posterior lower cervical spine tenderness with Grade 3 power in the upper limbs bilaterally. His upper limb sensory exam is normal. His lower limb neurological exam is normal.

His C-Spine X Ray is shown below.



Xray courtesy of Assoc Prof Craig Hacking, Radiopaedia.org, rID: 66804

Part a (2 marks)

List two relevant abnormal findings from this x-ray.

Model Answer

- Anterior-inferior Tear drop # of C2
- Mild Prevertebral soft tissue swelling
- Mild retrolisthesis of C2 on C3

Part b (8 marks)

Complete the following table for four (4) cord syndromes with differentiating clinical features and aetiology.

Model Answer

Cord Syndrome	Central Cord	Anterior Cord	Posterior Cord	Brown-Sequard
Aetiology (4 marks)	Hyperextension injury, eg whiplash car crash	Hyperextension injury, eg whiplash car crash	Hyperextension injury, eg whiplash car crash	Hyperextension injury, eg whiplash car crash
Clinical Features (4 marks)	Bilateral limb paresis Upper >> Lower limbs	Bilateral limb paresis Upper >> Lower limbs	Bilateral limb paresis Upper >> Lower limbs	Bilateral limb paresis Upper >> Lower limbs

Part c (2 marks)

List one (1) differentiating clinical feature each for Neurogenic and Spinal Shock.

Model Answer

Neurogenic Shock	<ul style="list-style-type: none"> Peripherally vasodilation Hypotension Relative bradycardia
Spinal Shock	<ul style="list-style-type: none"> Flaccid below the level of lesion / Loss of sensorimotor function Loss of reflexes distal to lesion Priapism may be present

Question 8 (12 marks)

A 70 year old female presents with a 3 day history of abdominal cramping, vomiting and diarrhoea. In the past 12 hours she has also become mildly confused with drowsiness and fatigue. This is in the background of a past history of hypertension and type 2 diabetes for which she is medicated with Amlodipine and Jardiamet (Empagliflozin and Metformin).

VBG

pH	7.03 mmHg
pCO ²	18 mmHg
pO ²	52 mmHg
HCO ₃ ⁻	6.7 mmol/L
Na ⁺	139 mmol/L
K ⁺	3.7 mmol/L
Cl ⁻	103 mmol/L
Glu	6.2 mmol/L
Lactate	2.2 mmol/L

Part a (8 marks)

List four (4) important findings from the VBG and the calculations or an explanation for each abnormality.

Model Answer

Finding	Calculation
Severe life-threatening RAGMA	Anion gap = $139 - 7 - 103 = 29$ Delta ratio = $29 - 12 / 24 - 7 = 17 / 17 = 1$
Compensated respiratory alkalosis	Exp CO ₂ = $8 + [1.5 \times 7] = 18.5$
potassium	Expect K = $5 + [0.5 \times 4] = 7$ Expect for pH of 7.03 K ⁺ would be 7.0, diarrhoeal loss a likely cause

+1 Other:

- Mild hyperlactataemia: Volume depletion, potential evolving shock from underlying cause of illness
- Euglycaemia: Pharmacological action of Empagliflozin: SGLT-2 inhibitor increasing urinary glucose excretion.

must have bold points: RAGMA, Resp comp, K deplete for pH

Part b (4 marks)

The patient's blood ketone level is elevated at 4.2 while the glucose level is confirmed as remaining at normal levels (currently 6.2). They have normal vital signs but remain mildly confused with ongoing gastrointestinal symptoms. List four (4) initial intravenous (IV) treatments you would commence for this patient in the ED.

Model Answer

IV TREATMENT:

- Insulin (actrapid/novorapid)
- 5% Dextrose

+2 Other (any of):

- Fluid
- Potassium
- Analgesic
- Antiemetic
- Broad Spectrum/Empirical Antibiotics

Question 9 (18 marks)

20-year-old woman is brought to your Emergency Department with one week of vomiting and confusion.

A venous blood gas is performed as part of her initial assessment. The results are as follows:

pH	7.16
pCO ₂	33 mmHg
pO ₂	40 mmHg
HCO ₃ ⁻	12 mol/L
BE	-15.7 mmol/L
Hb	137 g/L
Na ⁺	130 mmol/L
Cl ⁻	90 mmol/L
K ⁺	5.2 mmol/L
Glucose	37.0 mmol/L
Lactate	2.2 mmol/L
Ketones	3.0 mmol/L

You suspect Diabetic Ketoacidosis (DKA).

Part a (3 marks)

List 3 (three) other possible causes for raised ketones in this patient.

Model Answer

1. normal pregnancy (up to 3mmol/L)
2. starvation
3. alcoholic ketoacidosis

Part b (3 marks)

List three (3) diagnostic criteria for DKA.

Model Answer

- blood glucose >11mmol/L or known diabetic
- HCO₃⁻ < 15 mmol/L
- ketones:
 - ketonuria ≥ 2+
 - serum ketones ≥ 3 mmol/L
- pH < 7.3

Part c (1 mark)

What is the formula for Strong Ion Difference?

Model Answer

Na⁺ - Cl⁻

or

(Na⁺ + K⁺) - Cl⁻

Part d (1 mark)

What acid-base derangement is expected by this patient's Strong Ion Difference?

Model Answer

Hypochloraemic alkalosis

or

Alkalosis

or

Hypochloraemia

Part e (1 mark)

What is a formula that could be used for Sodium Correction?

Model Answer

- Measured Sodium + [(Glucose - 5)/3]
- Measured Sodium + [1.6 (glucose - 100) / 100]
- Measured Sodium +(glucose - 10)/3

Part f (2 marks)

You decide to commence an insulin infusion along as part of your initial management. State the rate and goal of the insulin infusion.

Model Answer

1. Rate: 0.1 unit/kg/hour IV
2. Goal: reduce glucose by 3 mmol/L/hour

or

Reduce ketones to <1.0 mmol/L

or

Correct acidosis

Part g (1 mark)

You commence initial resuscitation of the patient In ED with an insulin infusion, intravenous fluids and intravenous antibiotics. Three hours later a venous blood gas is repeated. The results are as follows:

pH	7.12
pCO ₂	30 mmHg
pO ₂	63 mmHg
HCO ₃ ⁻	18 mmol/L
BE	-17.7 mmol/L
Hb	114 g/L
Na ⁺	133 mmol/
Cl ⁻	103 mmol/L
K ⁺	4.2 mmol/L
Glucose	25.0 mmol/L
Lactate	1.9 mmol/L

Ketones 1.1 mmol/L

What acid-base derangement is now demonstrated by this patient's strong ion difference?

Model Answer

Hyperchloremic acidosis

or

Acidosis

or

Hyperchloraemia

Part h (6 marks)

List the most likely cause of this acid-base derangement, along with four (4) other possible causes.

Model Answer

USED CARP (one mark each)

U – Ureteric diversion

S – Small bowel fistula

E – Extra chloride (ED resuscitation) or HCl ingestion

D – Diarrhoea

C – Carbonic anhydrase inhibitors

A – Addison's (Type 4 RTA)

R – Renal tubular acidosis types 1, 2, and 4

P – Pancreatic fistula

Question 10 (18 marks)

A 34 year old man is brought in by ambulance after being found unconscious at home. He has a history of depression and had written a suicide note. You suspect an intentional overdose. He is unconscious and can provide no further history.

Part a (18 marks)

Complete the table by listing six (6) toxic causes of coma that may require SPECIFIC treatment and state one (1) specific diagnostic feature you would look for on physical examination or investigation that would be consistent for each toxic agent and one specific treatment, with rationale, for each ingestion.

Model Answer

	Toxic agent (6 marks)	Diagnostic feature (6 marks) <i>Each finding can only be used once</i>	Specific treatment with rationale (6 marks)
1	Opioid eg heroin	Respiratory depression	Naloxone - opioid antagonist to reverse respiratory depression
2	valproate	Elevated serum valproate concentration	Haemodialysis – enhanced elimination of valproate in severe toxicity (lactic acidosis, CVS instability)
3	sulfonylureas	hypoglycaemia	Dextrose, octreotide – to reverse hypoglycaemia
4	carbamazepine	Elevated serum carbamazepine concentration Fluctuating mental state with intermittent agitation	Haemodialysis – enhanced elimination of carbamazepine in severe toxicity (prolonged coma, CVS instability)
5	TCA	Sodium channel blockade on ECG	Hyperventilation and sodium bicarbonate – systemic alkalinisation to reduce toxicity of TCA - Sodium load to reverse sodium blockade
6	Ethylene glycol	Elevated osmolar gap and HAGMA	Ethanol to prevent transformation of EG to toxic metabolite (oxalic acid) Haemodialysis – enhanced elimination of EG

	Toxic agent (6 marks)	Diagnostic feature (6 marks) <i>Each finding can only be used once</i>	Specific treatment with rationale (6 marks)
7	salicylate	Elevated serum salicylate concentration	Urinary alkalinisation to increase urinary salicylate excretion

Question 11 (12 marks)

A 78 yo man presents with tearing chest pain suggestive of aortic dissection.

Part a (8 marks)

Complete the following table, by listing two pro's and two con's, regarding the utility of the following investigations in the diagnosis and management of aortic dissection.

Model Answer

	Pro	Con
CT Aortogram	<ul style="list-style-type: none">localises siteidentified cx (branch artery involvement)rupture with end organ involvement (send 100%, spec 100%)	<ul style="list-style-type: none">can't assess aortic incompetencepatient req. transport away from resus area
Transthoracic Echocardiogram	<ul style="list-style-type: none">sensitive for ascending aorta involvementexcellent to assess valve involvement and tamponade	<ul style="list-style-type: none">unable to visualise descending aortaoperator variability

Part b (2 marks)

List two principles of blood pressure management when treating aortic dissection.

Model Answer

- time critical nature
- prevent reflex tachycardia (prevent shear forces on flap)
- vasodilators must follow rate control
- invasive BP monitoring required
- infusions required to carefully control BP
- set HR and BP goals early: sbp 120-130, HR <60

Part c (2 marks)

State two (2) key issues in the management of a patient with proven Type A aortic dissection in addition to blood pressure management.

Model Answer

- Analgesia e.g. titrated IV morphine will help with BP control
- Early cardiothoracic surgical referral, untreated, death rate is 1%/hr
- Early transfer, communications for definitive care
- Establish Rx aims/ limitations
- Definitive treatment is urgent to minimise morbidity and mortality
- Avoid pericardiocentesis & inotropes if possible

Question 12 (12 marks)

A 35-year-old female presents to the emergency department with low mood, non-specific body aches, and generalised weakness. She has presented with similar complaints twice in the last week but did not wait to be seen. During your assessment she tells you that she has been feeling “under the pump” and stressed over the past month. She does not take any medications.

Part a (5 marks)

Other than a persistent depressed mood, list five (5) other symptoms you would seek to aid in the diagnosis of major depressive disorder.

Model Answer

(DSM V)

- Depressed mood most of the day, nearly every day.
- Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day.
- Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day.
- A slowing down of thought and a reduction of physical movement (observable by others, not merely subjective feelings of restlessness or being slowed down).
- Fatigue or loss of energy nearly every day.
- Feelings of worthlessness or excessive or inappropriate guilt nearly every day.
- Diminished ability to think or concentrate, or indecisiveness, nearly every day.
- Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

(ICD-10)

- Depressed mood, most of the day, nearly every day, largely uninfluenced by circumstances
- Markedly diminished interest or pleasure in all, or almost all, activities, most of the day, nearly all day
- Loss of energy or fatigue, nearly every day
- Loss of confidence or self-esteem
- Unreasonable feelings of self-reproach, or excessive or inappropriate guilt, nearly every day
- Recurrent thoughts of death or suicide or any suicidal behaviour
- Diminished ability to think or concentrate or indecisiveness, nearly every day
- Psychomotor agitation or retardation, nearly every day
- Insomnia or hypersomnia, nearly every day
- Change in appetite

Part b (4 marks)

You suspect that this patient is currently suffering major depressive disorder. The psychiatry registrar asks you to consider medical causes of the patient's symptoms. List four (4) medical conditions that can mimic depression, specific to this patient.

Model Answer

- Alcohol abuse
- Anaemia
- Hypothyroidism
- Post viral syndrome
- Multiple sclerosis

- HIV infection
- Hypercalcaemia
- Huntington's disease

*** Note in this patient

Talley O'Connor

- Hypothyroidism***
- Androgen deficiency
- Menopause
- Parkinson's disease
- Multiple sclerosis***
- Chronic illness – HIV infection***, heart failure
- Drug treatment – interferons, chemotherapeutic agents

Cameron's

- Hypothyroidism***
- Hypercalcaemia***
- Pernicious anaemia***
- Pancreatic cancer
- Lung cancer
- Stroke
- Alzheimer's dementia
- Vascular dementia
- Parkinson's disease
- Huntington's disease***
- AIDS***
- Central nervous system tumour
- Multiple sclerosis***
- Neurosyphilis
- Brucellosis

Dunn

- alcohol ***
- infections ***
 - -HIV
 - -syphilis
 - -Lyme disease
- endocrine ***
 - -hypothyroidism
 - -hyperparathyroidism
 - -adrenocortical insufficiency
 - -Cushing's syndrome
 - -exogenous steroids
- malignancy ***
- cerebrovascular disease
- myocardial infarction

- vitamin B12 deficiency
- malnutrition ***
- medications

Part c (3 marks)

List three patient-based reasons why patients do not wait to be seen following triage.

Model Answer

- Reason for attendance has resolved
- Feel their problem is inappropriate for the ED
- Perceived triage inequity
- Other activities prioritised over healthcare
- Too agitated and anxious to wait

Other non-patient based answers

- Prolonged waiting time
- Rude ED staff

Many other sensible answers

Question 13 (12 marks)

You are working in a rural Emergency Department when a 27 year old with a swollen leg and shortness of breath presents to your department. Your resident has reviewed the patient but asks you some questions regarding the diagnostic strategy for a Pulmonary Embolus.

Part a (5 marks)

List 5 hereditary risk factors for a Pulmonary Embolism.

Model Answer

- Prothrombin Gene mutations
- Antithrombin III deficiency
- Protein C deficiency
- Protein S deficiency
- Factor V Leiden mutation

Part b (3 marks)

In the Simplified Wells Score, list three (3) of the features with the highest points.

Model Answer

3 points each for Clinical signs of a DVT and Alternative diagnosis less likely

1.5 points for HR>100, Immobilisation / Surgery in the previous 4 weeks, Previous DVT / PE

Part c (4 marks)

List one diagnostic finding for each of the following tests in Pulmonary Embolism.

Model Answer

ECG	S1,Q3, T-wave inversion in 3 with right axis deviation, RBBB, p pulmonale, RVH and strain
ABG	Hypoxia on room air, Increased A-a gradient (>20)
Echocardiogram	RV dilation and hypokinesia, McConnell's sign, Thrombus visible in RV or main pulmonary artery
Chest X-ray	Westermarck's sign, Hampton's hump, pulmonary infarct

Question 14 (12 marks)

Your Director of Emergency Medicine has asked you to contribute to a departmental guideline. The guideline aims to improve the Wellbeing of its Emergency Physician (EP) workforce. They have suggested you focus on:

- Rostering and Fatigue Management
- Infrastructure

Part a (5 marks)

State five rostering and fatigue management strategies which address EP Wellbeing

Model Answer

Accept the following / principles more important than exact wording:

- Rostering 'safe working hours'
- Must retain regular access to days off (free from work)
- casual or supplementary staff members treated as valued part of workforce
- Rotate through shifts in areas of high stress to areas of low stress
- Regular breaks (ideally every 4 hours)
- Partner inexperienced or rotating staff with more experienced colleagues
- Appropriate remuneration for any additional working hours, consistent with relevant industrial agreements and frameworks.
- Emergency clinicians are provided with safe places to sleep at work (if required) taxi vouchers if unsafe to drive home after a shift
- Any proposal for the rostering of emergency physicians to night shifts should be consistent with the principles outlined in ACEM S456 (Statement on Night Shift Rostering of Emergency Physicians)

Part b (4 marks)

State four departmental infrastructure management strategies which address EP Wellbeing

Model Answer

Accept the following / principles more important than exact wording:

- Non-clinical areas (e.g. tea rooms) safely accommodate staff
- Change rooms with showers / fit out for COVID-safe distancing for example
- Non-clinical offices comply with physical distancing and allow for work processes
- Break out room for quiet space ("Zen Den")
- Ability to store and manage food
- Natural lighting if possible

Part c (3 marks)

List three positive outcomes FOR YOUR DEPARTMENT that addressing EP Wellbeing may provide

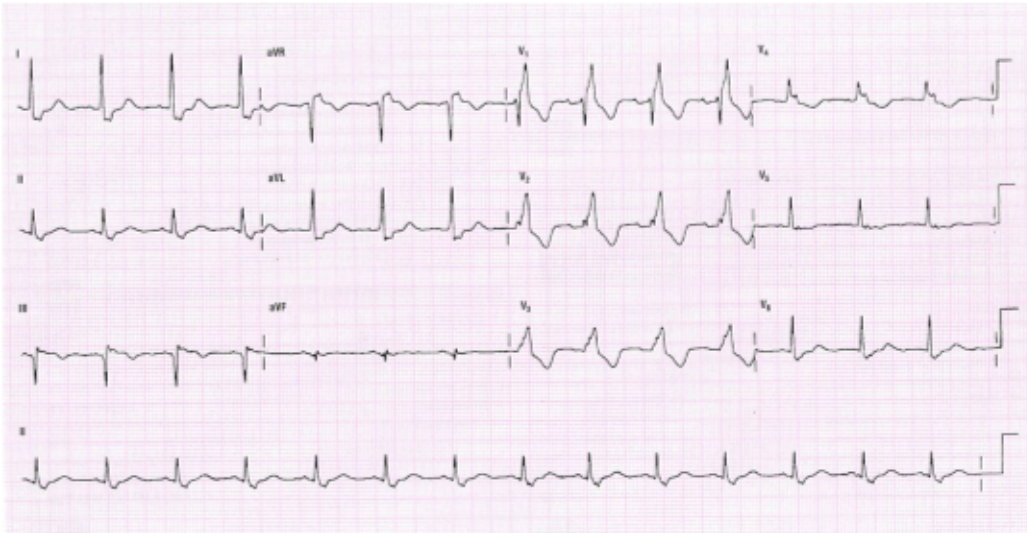
Model Answer

- Staff retention
- Decrease sick leave
- Decrease patient errors
- Improve civility or Improve handover accuracy or Improve interdepartmental care times

Question 15 (12 marks)

A 54 year old male presents to your Emergency Department with two hours of ischaemic sounding chest pain and increasing shortness of breath in the background of known COPD.

His ECG on arrival is below.



Part a (2 marks)

List two significant abnormalities in the ECG.

Model Answer

- RBBB
- ST elevation in lead III
- ST depression in lateral leads

Part b (2 marks)

List two possible pathological causes based on the ECG and the given patient information.

Model Answer

- inferolateral ischemia
- pulmonary hypertension/ right ventricular hypertrophy (RVH)

Part c (8 marks)

List four important steps in the management of this patient and outline the rationale for each of them.

Model Answer

	Management Step	Rationale
1	Aspirin 300 mg / Ticagrelor 180 mg	To prevent further platelet aggregation and limit further thrombi from forming and cardiac ischaemia
2	Heparin 5000 units IV bolus	To prevent clotting and limit thrombus formation and hence ischaemia

	Management Step	Rationale
3	O ₂ to maintain saturations of 88-92% or greater via non-rebreather mask or BiPAP	Optimising myocardial oxygenation while avoiding high levels leading to CO ₂ retention and type 2 respiratory failure
4	Titrated analgesia (morphine or fentanyl)	Decrease pain and sympathetic activity which leads to decreased myocardial oxygen demand
5	GTN	Vasodilation to increase myocardial perfusion
6	Referral to cardiology for urgent PCI	Acute cardiac ischaemia requiring PCI for optimising cardiac outcomes

Question 16 (12 marks)

A 35 year old female presents to the Emergency Dept. with an acute onset of severe LIF pain.

GCS 15
HR 110reg
BP 120/80
RR 16
Sats 100% RA

Part a (12 marks)

List three (3) differential diagnoses and complete the table below with one feature each on history, examination and investigation finding that is most supportive of the diagnosis.

Model Answer

	Diff. Diagnosis	History	Examination	Investigation Findings
1	Ruptured ectopic	Sudden onset	Adnexal mass	U/S....
2	torsion	May be sudden or staggered onset	Adnexal tenderness	Doppler US:...
3	Renal colic	Colicky pain	Blood on FWT	Renal Tract U/S:..
4	diverticulitis	Gradual onset of pain	May be guarding	CT abdo

Question 17 (12 marks)

A 40 year old female has presented to ED with diplopia.

Part a (6 marks)

Complete the following table by listing the extra-ocular muscle involved and likely clinical findings for each of the different pathologies listed.

Model Answer

Pathology	Name one extra-ocular muscle involved	Situation where diplopia would occur/worsen
Cranial nerve III palsy	Any of: medial rectus, superior/inferior rectus	On looking towards contralateral side/medial gaze
Cranial nerve IV palsy	Superior oblique	On looking downwards, or when tilting head ipsilaterally
Cranial nerve VI palsy	Lateral rectus	On looking towards affected side/lateral gaze

Part b (3 marks)

You suspect this patient has Horner's syndrome. List 3 clinical findings that would suggest this.

Model Answer

- Ipsilateral ptosis
- Ipsilateral miosis
- Ipsilateral anhidrosis

Part c (3 marks)

List 3 causes of Horner's syndrome in an adult.

Model Answer

- Tumour
- CVA
- Dissection
- Trauma
- Herpes zoster

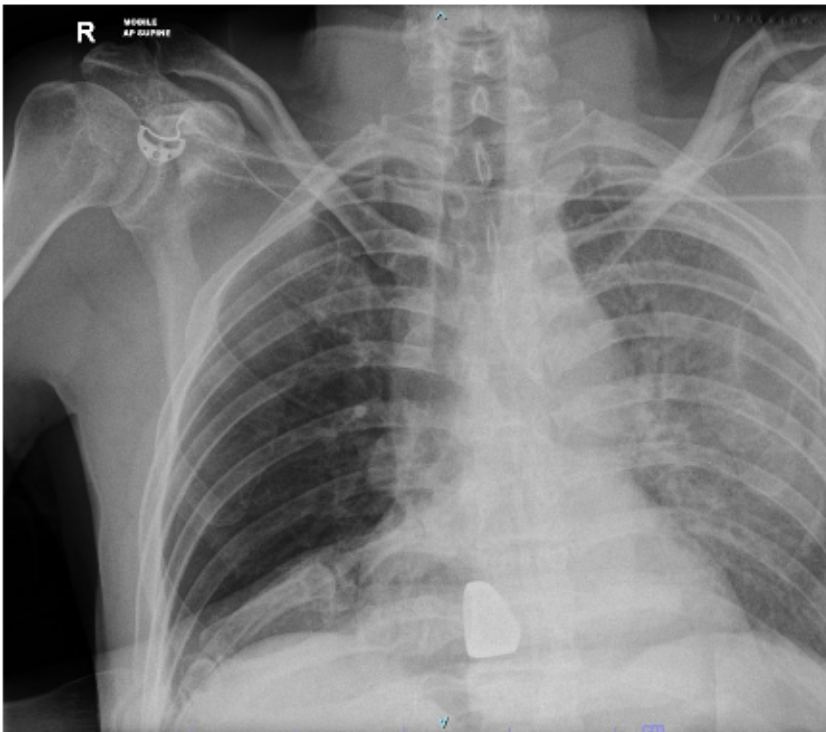
Question 18 (18 marks)

You are working as a consultant at a tertiary trauma centre. Prehospital notification is received that a 50 year old male will arrive in 10 minutes post high-speed MVA vs a tree.

Arrival observations are:

HR	140
BP	90/64
GCS	15
Sats	90% on 15L NRB

As part of your initial assessment the following CXR is performed.



Part a (4 marks)

List two critical conditions you are concerned the patient may have and for each, a supporting finding visible on the CXR.

Model Answer

- Blunt aortic injury - widened mediastinum/abnormal aortic contour, perhaps L apical capping
- L sided haemothorax - diffuse L sided opacification. ? would also accept contusion, though heart border v. well defined going against this.

Part b (1 mark)

Based on these findings, state your immediate emergency department management?

Model Answer

Finger thoracostomy +/- ICC

Part c (5 marks)

Soon after the patient becomes agitated, pulling off his O2 mask.

List five possible causes of altered conscious state in this patient?

Model Answer

- Hypoxia
- Hypovolaemia - ie shock. Only one point for blood loss.
- Drugs - taken prior to arrival or during ICC insertion
- Intracranial pathology
- Hypercapnoea
- Hypoglycaemia

Part d (5 marks)

You elect to intubate the patient. Soon after intubation the patient's observations are:

HR	90
BP	100/52
Sats	84%
FiO ₂	1.0

List five possible causes of this deterioration.

Model Answer

- Tube in wrong place
- Blocked ETT/sputum/blood
- Anaphylaxis
- Tension PTX
- Ventilator dysynchrony
- Primary lung pathology - contusions

Part e (3 marks)

CT imaging demonstrates isolated chest injuries. For trauma with isolated chest injuries, list three indications for immediate emergent operative management?

Model Answer

- Initial dump >1500mL from ICC
- Refractory shock
- Tamponade
- Tension pneumomediastinum

Question 19 (18 marks)

You are the Consultant in an Urban Emergency Department. A 6 day old baby presents with lethargy, reduced feeding, reduced wet nappies, pallor and a weak cry.

NVD at term, no anti-natal or post-natal issues.

Vital signs on arrival:

HR	180 bpm
Temp	38.5 °C
Cap refill	4 seconds
RR	70 sats 98% RA
AVPU	p

Part a (8 marks)

List eight (8) initial management priorities.

Model Answer

1. Administration of empiric IV antibiotics (?IM if delayed access)
2. Summon help, team, resus
3. Assess ABC, oxygen, cardiac monitor, conscious state
4. gain IV/IO access
5. bloods for culture, VBG, BSL, FBE, lactate
6. IV fluids: 20ml/kg,

repeat x 1 after reassessment (0.9%Normal Saline)

reassess fluid status/overload

7. Gain full history and examination
8. Explanation to carer/reassurance
9. Will need urine and LP – can defer LP

Part b (3 marks)

List three (3) common pathogens responsible for the above condition, in infants <3 months old?

Model Answer

- EColi
- Grp B Strep
- Listeria (v. uncommon) HSV ?

Part c (4 marks)

Prescribe the empiric appropriate antibiotics for this patient?

Model Answer

- Cefotaxime IV 50mg/kg
- Benzylpen IV 60mg/kg

Part d (3 marks)

Despite 40ml/kg IV fluid bolus the baby remains shocked. State three (3) further management steps in this situation?

Model Answer

1. Summon extra help – Code/ICU/PIPER
2. Inotrope/vasopressor peripherally
 1. Adrenaline 0.05-0.2mcg/kg/min recommended for neonates

Can give via periph IV or IO

2. NA (same dose) recommended for older kids

Persistent cardiovascular failure after 40ml/kg fluid requires reconsideration of the diagnosis and ongoing Rx options.

3. Respiratory support
 1. Conscious state Ok : HFNC/CPAP/BiPAP
 2. Alt Consc state : ?ETT

Question 20 (12 marks)

A 18yo M has been brought to your rural Emergency Department suffering a mixture of mid-deep dermal burns to his face, left arm and thorax and full thickness burns to his right arm. He was lighting a campfire and poured petrol onto the fire which resulted in his burns. The paramedics report initial first aid was given at the scene. You estimate the extent of the burns to be around 35% Total Body Surface Area. This was an isolated injury, and no other trauma was reported.

His initial vital signs are:

GCS	15
BP	150/80 mmHg
HR	130 bpm
SaO ₂	98% (Room Air)
estimated weight	80kg

Part a (2 marks)

List 2 features on initial assessment of the airway that would make you concerned for an inhalation injury.

Model Answer

- Soot in the mouth
- Hoarseness or change in voice
- Harsh cough
- Stridor
- Facial burns (especially mouth/lips/nose)
- Inflamed oropharynx

Part b (10 marks)

State 5 key principles and a rationale for each in the management and resuscitation of this patient with severe burns EXCEPT for airway management. Please include any interventions, calculations, dosing, and targets in your answer.

Model Answer

	Principle/Priority	Rationale
1	Fluid Management	Parklands Formula $3ml \times TBSA\% \times Weight = 8400ml$ Hartmann's 4.2L in first 8 hours then remaining 4.2L over next 16hrs Aim map 65 (normotension), UO >0.5-1ml/kg/hr. Monitor lactate and base excess IDUC
2	Analgesia	Morphine 5-10mg IV every 5min titrated to pain Ketamine 10-20mg IV incremental doses as adjunct Regular paracetamol 1g QID and NSAID.

	Principle/Priority	Rationale
3	Temperature management	Central (catheter if available) - Aim normothermia Warm fluids, Bair hugger/space blanket, towel around head Change wet linen
4	Wound management	Wrap burns in cling film or impregnated gauze/crepe.
5	Transfer	Organise transfer to major burns referral Centre

Question 21 (12 marks)

It is 19:00 hours, a 6 year-old boy is brought to your ED with facial trauma, he collided with another child while both were running In opposite directions. His right maxillary central incisor is partially fractured (partly missing) and the left maxillary central incisor is completely avulsed (parents have brought the avulsed tooth in milk).

Part a (6 marks)

List six (6) steps in your management of this child

Model Answer

- Assess other injuries (including oral mucosa, other teeth)
- Look for the missing fragment of tooth (? Embedded in soft tissue/ aspirated) , consider x-ray
- Provide analgesia
- Check the ADT status
- Antibiotics is controversial
- Consider re-implanting the avulsed tooth (if permanent) + external fixing, Do not re-implant the avulsed tooth (if deciduous)
- Refer to dentist (within 24 hours)
- Bonus: parental reassurance (dentures for cosmetic)

Part b (6 marks)

Regarding providing local analgesia for the following teeth, please complete the table below.

Model Answer

	Maxillary 1st premolar	Mandibular 1st premolar
Technique	Supraperiosteal infiltration	Inferior alveolar nerve block
Location of injection	Mucobuccal fold around the apex of affected tooth	Retromolar fossa affected side
Area that will be anaesthetised	Affected tooth (bonus: occasionally MSA and ASA n. -> lip)	Inferior alveolar (+ mental) -> tooth + gum + lip (+ bonus Lingul n. -> 2/3 of tongue)

Question 22 (12 marks)

A 75 year old man presents with severe left sided abdominal pain with associated nausea and loss of appetite. The pain is worse with movement and deep breathing.

Past medical history: Type II DM, Hypertension, Hyperlipidaemia, GORD and is a smoker.

Vital signs on arrival are:

HR	114
BP	115/70
RR	24
SaO ₂	96% on room air
Temp	38.3 °C

On examination, he is generally uncomfortable and diaphoretic.

Part a (8 marks)

Complete the table by listing two investigations that can be performed at the bedside which may immediately influence management, the findings you are looking for with each of these tests and then two immediate management priorities for each if the findings are present.

Model Answer

Investigation	Potential Finding	Management Priorities	
Erect CXR	Free gas under diaphragm	1	Urgent Surgical referral
		2	Triple antibiotics, IV fluids, analgesia
Bedside ultrasound	AAA If contained rupture, will not see free intraperitoneal fluid as it is retroperitoneal structure	1	Maintain BP ~90 systolic – IV fluids, blood if needed, titrated analgesia
		2	Urgent vascular referral for theatre
Will also accept: AXR	Rigler's sign – air on both sides of bowel wall OR Free gas on lateral decubitus view	1	IV antibiotics, IV fluids, titrated analgesia
		2	Urgent Surgical referral

Other bedside investigations such as VBG and FWT are going to be less specific.

VBG may show acidosis and high lactate but this may be due to hypoperfusion generally, rather than specifically ischaemic gut

FWT may show blood/leuks but these can be found in intraabdominal pathology and do not always mean renal colic or infected kidney stone

ECG is likely to be done as part of the workup and that is not unreasonable. If STEMI is said, I would refer back to the question. I have specifically made this abdominal pain rather than epigastric or chest pain as I was looking for work-up for potential intraabdominal emergency.

Part b (1 mark)

A CT is done later as part of his work up. Please list the most significant finding from it.



Model Answer

Pneumoperitoneum - Free intraperitoneal gas

Part c (2 marks)

List two potential causes for this finding?

Model Answer

- Perforated DU
- Perforated peptic ulcer
- Ruptured diverticulum

Part d (1 mark)

State the most appropriate disposition for this patient?

Model Answer

Urgent transfer to theatre for exploratory laparotomy and then likely to Intensive Care Unit post operatively.

Question 23 (12 marks)

A 5 yr old presents to your Emergency Dept with a painful forearm following a fall from a monkey bar. Her x-ray is displayed below.



Part a (4 marks)

List four (4) key findings in her x-ray.

Model Answer

1. Fracture midshaft ulnar with ulnar angulation (2)
2. Dislocated radial head (2)
3. Below elbow splint- needs above elbow (1)

Part b (1 mark)

What do you estimate her weight to be?

Model Answer

Numerous formulae could be used eg.

$$\text{APLS} - (\text{age} + 4) \times 2 = 18\text{kg}$$

$$3(\text{age}) + 7 = 22\text{kg}$$

Accept 20kg +/- 2 based on formulae they used.

Part c (3 marks)

Prescribe three analgesic options for this patient.

Model Answer

IN fentanyl- 1.5mcg/kg=30mcg (MANDATORY)

Oral analgesia – paracetamol (15-20mg/kg), ibuprofen (10mg/kg), oxycodone (0.1-0.2mg/kg)(1 each)

morphine IV (0.1mg/kg or titrate) (1)

nitrous would accept

Part d (4 marks)

She is now comfortable. List four further management steps in her ongoing care.

Model Answer

- Keep fasted
- Refer orthopaedics
- Above elbow backslab
- Advice parents (1)
- Neuro exam

Question 24 (12 marks)

You are the consultant in charge of the Emergency Department. Over the last 1 hour there have been 6 patients present with acute shortness of breath and wheeze; The ambulance have just called to notify you that they are transporting 2 acutely unwell patients with asthma who are likely to require a resus bay.

Part a (4 marks)

List four (4) actions you will take to prepare for a potential thunderstorm asthma event.

Model Answer

- Call a code brown/external emergency
- Activate local thunderstorm asthma disaster plan – prepare your department into zones for high, medium and low acuity patients (which may be external to the ED), and prepare for modified triage
- Decant patients from the ED to increase capacity for large numbers of arrivals
- Prepare staff – ED staff this shift and following, hospital staff to assist – inpatient unit, anaesthetics, ICU, respiratory
- Prepare equipment and drugs/medications – salbutamol, spacers, oxygen, ventilators, steroids

Part b (6 marks)

You decide that you will need to implement a modified triage system to manage large numbers of patient presentations.

Complete the following table regarding triage specific to asthma presentations by entering a single point per box.

Model Answer

Priority	Triage criteria	Initial management
One - Immediate	Severe/life threatening RR >30 SaO ₂ <90% Speech words or none GCS <14/agitated	O ₂ , Salbutamol/ipratropium nebs Oral or IV prednisolone/dexamethasone Consider IV therapy
Two - Urgent	Moderate RR 24-30 Sats 90-94% Speech – short sentences GCS 15	Salbutamol via MDI burst Therapy Oral prednisolone Consider loratadine
Three - delayed	Mild RR 12-24 Sats >94% Speech – full sentences	Salbutamol via spacer – once and review (patient information) Oral prednisolone, consider loratadine

Part c (2 marks)

List two general principles that should apply when managing thunderstorm asthma during the COVID-19 pandemic.

Model Answer

- Ensure all staff treat every patient in full PPE
- All aerosol generating procedures to be done in negative pressure environment where possible
- Provide vulnerable patients with a separate room/area (eg immunosuppressed)
- Treat all patients as suspected COVID

Question 25 (12 marks)

You receive a phone call from the partner of a patient who was seen in your Emergency Department and discharged home. The partner has advised the patient has been admitted to ICU at another hospital following a ruptured ectopic pregnancy.

The patient is a 35 year old female who presented with left iliac fossa pain and was seen and discharged by one of your junior registrars.

Part a (3 marks)

List three (3) hospital personnel that you would notify of this event.

Model Answer

Would accept 3 of the following (one in each group)

- ED Director (or other ED leadership position),
- Medicolegal /legal / insurer
- Risk management /Clinical Governance /RCA team/ Quality Department
- Director Medical Services / Chief Medical Officer / CEO

Did not accept: Doctor / junior registrar involved

Part b (5 marks)

You review the ED clinical record for the patient's attendance.

State five (5) important aspects of the case that you wish to investigate.

Model Answer

- Assessment (history & examination) - accurate, vital signs performed/stable
- diagnosis/differentials -was ectopic considered/pregnancy excluded
- Investigations - was b-HCG performed/ results checked & documented Consult/referrals - discussion with senior ED doctor, O&G prior to discharge
- Disposition / follow up instructions given to patient

Be specific. "BHCG" rather than "investigations done"

Need to include information likely to be in clinical notes.

Staffing, workload are part of the incident investigation, but are not usually included in clinical record.

Part c (4 marks)

You plan to meet with and inform the junior registrar involved.

State four (4) points that you need to cover during the conversation with the registrar.

Model Answer

This is likely to be a very distressing experience for the junior registrar.

You must include offering professional support.

- Explain what has happened & outline investigation/response process
- Ensure doctor receiving professional support. Identify any personal issues.
- Seek registrar's account of event - Any system/contributing factors
- Identify & follow-up any practice issues - education, supervision, remediation

Will accept other points that broadly cover these items - 1 mark per broad category.

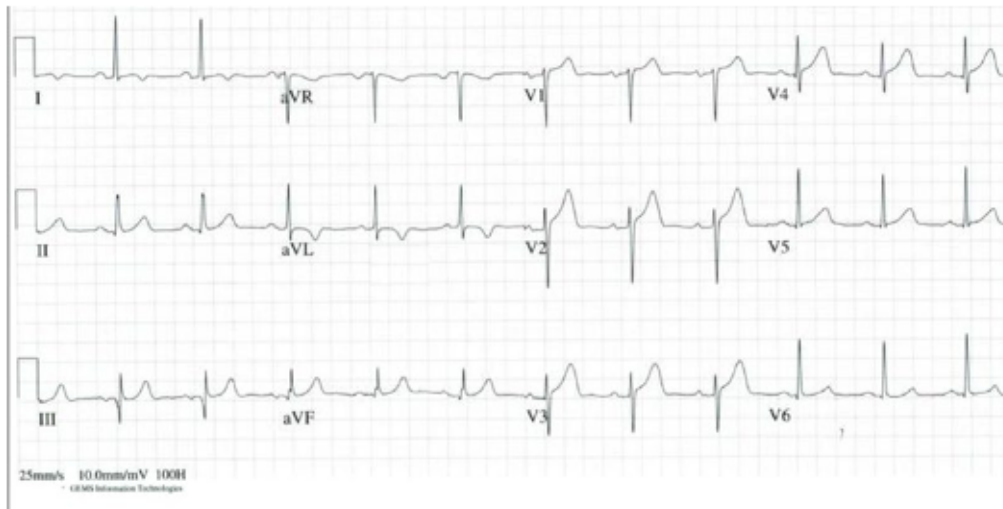
Question 26 (12 marks)

During morning hand over, you are taking over the care of a 63 year old male with a past history of untreated hypertension who presented to your non-tertiary Emergency Department overnight with central chest pain radiating to his left arm.

His vital signs on arrival:

BP	175/100 mmHg
RR	22 bpm
SaO ₂	95% RA
Temp	36.2 °C

He had an ECG on arrival and is shown below:



Part a (2 marks)

State two (2) abnormal findings in his ECG.

Model Answer

non specific findings ; Antero septal and infers-lateral ST-T changes with some descriptions

Part b (3 marks)

As a result of his elevated troponin, the patient was referred to cardiology overnight and accepted for transfer to the CCU of the nearby tertiary hospital. In the interim he has received anti platelets as well as Enoxaparin. During the morning hand over, the emergency alarm is activated by the bedside nurse and the patient is found to be unresponsive without any cardiac output.

State three (3) management changing utilities of Point of care / Resuscitative Ultrasound in this case.

Model Answer

- PEA Vs Pseudo PEA / Cardiac activity
- Diagnosis of some of the reversible causes (Hs and Ts) ie Tamponade/PE/tension PTX/catrdiogenic shock /hypovolemia
- Guide and assist management
- Prognostic utility
- Efficiency of CPR

Part c (3 marks)

His POCUS during Resus is shown below:



List three (3) important findings on his POCUS exam.

Model Answer

- large pericardial Effusion
- Collapsed RA and RV
- non collapsed Tricuspid annulus

Part d (2 marks)

List two (2) important differential diagnosis for the above pathology in this case.

Model Answer

TAD type A (must mention)

+ one other cardiac/vascular causes

Part e (2 marks)

State two (2) specific strategies for utilising POCUS in the emergency management of above pathology.

Model Answer

- U/S assisted Vs land mark preicardiocentesis
- identification of the biggest pocket of fluid
- Use of contrast (agitated saline) / location of the needle
- identification of the causes of tamponade ie TAD/ventricular rupture to direct specific treatment.

Question 27 (18 marks)

Grace is a 6 year old girl, who has been brought in by her father after she inserted a small bead into her right nostril. She has no significant past history, and has no regular medications or allergies.

Her vital signs are within normal limits for age. Grace is 20 kg in weight.

Although "parent's kiss" has failed to expel the nasal foreign body, the bead is visible and anterior enough for removal in ED. The child however is very anxious about the procedure.

You have discussed a trial of midazolam with the father, and have reassured Grace a "no needle" approach to this anxiolytic medication.

Part a (2 marks)

How would you prescribe this midazolam (route and dose in mg), and when would you expect peak sedative effect from time of administration?

Model Answer

- Oral, 10mg
- 20 minutes from administration

Part b (6 marks)

The midazolam has resulted in mild sedation, but not enough for the foreign body removal to proceed safely. The father is still keen to have the bead removed in ED - you discuss the use of ketamine with him. What are the benefits (3) and risks (3) of ketamine to Grace that you should be discussing with the father, as part of the consent process?

Model Answer

Benefits	Risks
Maintain airway reflexes	Laryngospasm
Main respiratory effort	Emergence / hallucinations / nightmares
Stable haemodynamics in well patient	Nausea/vomit or aspiration
Optimal procedural environment - will keep child still	Allergy
Dissociative anaesthetic / no awareness	Apnoea (if pushed too quickly intravenously)

Part c (1 mark)

Her father consents to ketamine to facilitate nasal foreign body removal. Despite the earlier midazolam, she remains anxious and is moving too much for safe insertion of a peripheral intravenous catheter. How would you prescribe (route and dose in mg) the ketamine for procedural sedation in this situation?

Model Answer

IM, 80 mg

Part d (3 marks)

Prior to ketamine administration, the nurse sets up equipment for the airway trolley and has sought your guidance regarding the sizing of the airway equipment for Grace. Please list your three options.

Model Answer

- LMA 2 or 2.5
- Laryngoscope blade (macintosh) 2
- ETT size (cuffed) 5

Part e (6 marks)

Grace is sedated with ketamine, and the bead is removed in an atraumatic fashion. You re-examine the child and confirm that there are no further foreign bodies in her nose or airway.

Soon after this, the child develops a stridor and SpO₂ drops to 92% despite oxygen through a non-rebreather mask. She is still sedated by the ketamine. You and an assisting emergency physician in the procedure room conclude that the airway is not soiled and that there is no allergic reaction present.

List 4 steps in your approach to treat this condition (include doses of any medications uses)?

Model Answer

- Larsons point / jaw thrust
- PPV / PEEP
- Deepen with sedation: Propofol 40mg IV
- Paralysis: Suxamethonium 20-40mg IV