



Model Answers — NSW Practice SAQ Trial 2022.1

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Question 1 (18 marks)

A 3-year-old boy arrives to your urban district Emergency Department having been found at the bottom of a backyard swimming pool in cardiac arrest. His parents provided initial basic life support until the paramedics arrived. Return of spontaneous circulation was obtained after 12 minutes.

You have assembled and briefed your resuscitation team.

On arrival to the ED he is intubated and manually ventilated on 100% oxygen. He has bilateral air entry with coarse crepitations on auscultation. He remains unconscious.

His vital signs are:

SpO ₂	72 %
Pulse	180bpm
SBP	82mmHg
CRT	6 - 7s
Temp	33 °C

Part a (5 marks)

List five immediate management priorities for this patient.

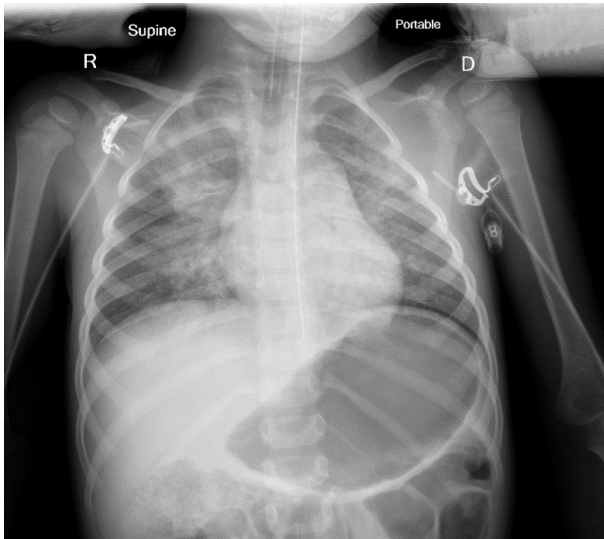
Model Answer

1. Optimise oxygenation
 - a. Add PEEP valve (5-10cmH₂O)
 - b. Gastric decompression
2. Optimise haemodynamics
 - a. Cautious fluid bolus (10mL/kg crystalloid)
 - b. End-points: cap-refill <3sec, improved HR
3. Neuro protection and avoidance of secondary brain injury
 - a. SpO₂ > 92%
 - b. CO₂ ~35-40mm Hg
 - b. Head up 30°
 - c. ETT taped, not tied
4. Detect & correct hypoglycaemia
 - a. If BSL <3, Rx with 10% dex 2mL/kg
5. Temperature control
 - a. Active warming to normothermia
6. Commence sedation:
 - a. Morphine + midazolam infusion
7. Supportive care:
 - a. Urinary catheter
 - b. Social worker for family
8. Disposition:
 - a. Needs PICU & requires suitable retrieval to tertiary Paeds centre

Part b (4 marks)

A mobile chest x-ray is taken in the resuscitation bay.

List four significant findings on this x-ray.

**Model Answer**

1. Endotracheal tube (just above clavicular heads)
2. Bilateral pulmonary infiltrates consistent with aspiration
3. Large gastric distension
4. Gastric tube inserted, but too short (not in stomach)

Part c (5 marks)

What initial ventilator settings would you prescribe for this child?

Model Answer

Ventilator parameter	Settings
FiO ₂	100%
PEEP	5-10 cmH ₂ O
Peak inspiratory pressure	15-30 cmH ₂ O
Tidal volume	5-8mL/kg
Respiratory rate	~25/min
I:E ratio	1:2

Part d (4 marks)

You manage to achieve an SpO₂ of 92% on the current ventilator settings however despite increasing the minute ventilation the patients' end-tidal CO₂ reading remains high.

His venous blood gas reveals a pCO₂ of 72mmHg with a pH of 7.14.

List four interventions to improve the respiratory acidosis in this child.

Model Answer

1. Remove excessive ventilator dead-space (flex-tubes/ filters)
2. Ensure adequate sedation &/or muscle relaxation
3. Ensure ETT has not migrated (both lungs ventilating)
4. Adjust ventilator settings - increase rate/Vt/PS
5. Decompress stomach (OGT / NGT)
6. Sit up 30°

Question 2 (18 marks)

A 75-year-old man is brought to the Emergency Department following a fall approximately 1.5 metres off a ladder. He reports hitting the right side of his chest but denies a head strike or loss of consciousness.

His vital signs are:

GCS	15
Pulse	65/min
BP	160/90 mmhg
SpO2	91% RA
RR	22/min
Temp	36.5 °C

Part a (4 marks)

Complete the table listing four classes of drugs and a complicating factor that may affect his assessment or management.

Model Answer

Drug	Complicating factor
Beta blockers	Masking a tachycardia Reduce ability to compensate for blood loss.
Direct acting oral anti-coagulants and/or warfarin.	Increased risk of bleeding, and/or worsen bleeding that occurs.
Opiates	Poor response to conventional doses of analgesia due to tolerance. Potential withdrawal.
Diuretics	Relative intravascular depletion, making assessment of blood loss challenging
Aspirin	Increased risk of bleeding.
Any drug class with a cogent complication!	

Part b (2 Marks)

You perform a chest x-ray.

List two relevant findings.

**Model Answer**

multiple displaced right sided rib fractures (4-6) no obvious pneumothorax

no surgical emphysema

Blunting of the right costophrenic angle suggestive of a small haemothorax in this context. Normal mediastinal contour

Part c (3 marks)

Complete the table listing the advantages and disadvantages of the following radiological modalities for the assessment of thoracic trauma.

Model Answer

Modality	Advantage	Disadvantage
Chest radiography	Widely available, can be done at the bedside	Relatively poor sensitivity and specificity.
Ultrasound	Widely available, can be done at the bedside, noradiation exposure.	Operator dependent.
Computed tomography	Clearly delineates most significant pathologies.	Radiation exposure. Requires transfer to radiology.

Part d (6 marks)

List analgesic options in the table below, with an advantage and disadvantage for each, with particular focus on the geriatric patient.

Model Answer

Modality	Example	Advantage	Disadvantage
Oral	Multimodal oral e.g. oxycodone 5 mg QID, paracetamol 1 g QID and ibuprofen 400 mg QID	Easily administered	Inadequate analgesia (older adults more likely victims of oligo-analgesia). Adverse effects (e.g. constipation and delirium (oxycodone), precipitation of acute on chronic renal failure (NSAIDs)).
Parenteral	Parenteral analgesia - intermittent bolus dose opiates	Clinician able to titrate, fast acting	Adverse effects - delirium, resp depression, constipation, N&V Oversedation
Parenteral	Patient controlled analgesia	Can be titrated to effect by patient. Less risk of oligo-analgesia.	Older patients may lack dexterity to use the device. Confused patients may not understand how to use the device. Constipation. Delirium. Difficulty adjusting settings
Regional	Ultrasound guided serratus anterior plane block	May provide very effective analgesia. Avoids constipation and other opiate related effects.	Operator dependent. May be less effective for posterior fractures. Limited duration of action.
Regional	Ultrasound guided erector spinae plane block	May be more effective for posterior rib fractures. Otherwise, as per SAPB	As per SAPB.

Part e (1 mark)

His pain is well controlled. As part of his further work-up, a CT brain performed.

Describe and interpret the image.



Model Answer

Right sided acute sub-dural haematoma, without any evidence of midline shift, and evidence of cerebral atrophy.

Part f (2 marks)

You discover that he takes dabigatran for atrial fibrillation, having taken his last dose > 12 hours ago. Dabigatran levels cannot be performed in the hospital laboratory.

List two blood tests you would request with your rationale for determining whether a reversal agent is required.

Model Answer

Urea, electrolytes and creatinine (normal renal function in this time frame means likely to have cleared).

Activated partial thromboplastin time (aPTT) and thrombin time (TT) - if both normal, dabigatran not present.

Question 3 (12 marks)

You are working in a busy Emergency Department. There have been ongoing issues with access block and overcrowding.

Part a (2 marks)

Define Emergency Department overcrowding.

Model Answer

Situation where ED function is impeded primarily because the number of patients waiting to be seen, undergoing assessment and treatment, or waiting to leave exceeds the physical and/or staffing capacity of the ED

Part b (6 marks)

Other than access block, list six causes for ED overcrowding.

Model Answer

1. increased patient number (eg- a seasonal component like winters)
2. increased patient complexity
3. increased unnecessary patient evaluation/investigation
4. delays in referral
5. delays in inpatient unit assessment
6. delays in other services eg radiology, pathology, allied health (max 2 marks)
7. ED staff factors eg-skills, numbers
8. ED structure eg design/size

Part c (1 mark)

Define access block.

Model Answer

Inability to access appropriate beds in a timely manner for emergency patients who require inpatient admission quantified as the proportion of patients admitted, transferred to other hospitals, or who die in the ED who have a total ED time (arrival at triage to discharge from the ED) of more than 8 hours

Part d (3 marks)

List three broad recommendations made by ACEM (Australasian College for Emergency Medicine) to ensure more effective and efficient patient care in Emergency Department.

Model Answer

- demand reduction eg increased access to outpatient clinics, easier referral pathways
- removing barriers to patient flow eg pull model, minimize investigations in ED
- reducing hospital occupancy eg improved discharge planning, HITH options post discharge

(Would accept one example from each category instead)

Question 4

A 22-year-old woman presents to your Emergency Department with bilateral lower limb weakness that has progressed within the last 24 hours.

She has a history of Rheumatoid arthritis and is on methotrexate. On examination she has a vesicular rash on the right upper limb.

Part a (6 marks)

Other than transverse myelitis, complete the table providing two examples of conditions that could result in acute respiratory distress or respiratory failure under the following categories.

Model Answer

Category	Examples
Spinal cord disease	1. Multiple sclerosis 2. Epidural abscess 3. Spinal neoplasm 4. Spinal artery infarction 5. Vertebral disc herniation 6. Canal stenosis (degenerative) 7. Polio 8. MND/ALS
Peripheral Nerve disease	1. Guillain - Barre syndrome 2. Tick Paralysis 3. Phrenic nerve palsy
Neuromuscular Junction Disease	1. Myasthenic crisis/ gravis 2. Botulism 3. OP poisoning

Part b (1 mark)

You suspect HSV transverse myelitis.

What is an appropriate antimicrobial therapy including drug name, route and dose?

Model Answer

Aciclovir 10mg/kg 8H IV)

Part c (5 marks)

You want to assess her need for mechanical ventilation.

List and justify five signs and/or bed side investigations that you can utilise to guide this assessment.

Model Answer

- RR for tachypnoea/bradypnoea
- Pulse oximetry for hypoxia
- Swallow assessment suggesting bulbar weakness
- Poor cough, secretions indicating bulbar weakness
- Lift head off bed, muscle weakness
- Peak flow OR Spirometry (vital capacity <20ml/kg)
- ABG - respiratory acidosis/type 2 respiratory failure
- Single breath count, resp/bulbar muscle fatigue

Question 5 (12 marks)

A 4 year old boy attends the Emergency Department with a 1-week history of fever and bloody diarrhoea. He is seen by one of your Advanced Trainees.

A full blood count is performed:

Hb	75
Plt	20
WCC	14

Blood film – schistocytes ++

Coombs' test negative

The results are consistent with a microangiopathic haemolytic anaemia.

Part a (4 marks)

Other than Haemolytic Uraemic Syndrome (HUS), list four other causes of a microangiopathic haemolytic anaemia (MAHA).

Model Answer

- DIC
- HELLP, Pre-eclampsia, Pregnancy induced HTN (max 1 mark)
- TTP
- Malignant HTN
- Cancer, usually disseminated or advanced
- Cardiac valve prostheses
- Drugs with example given, eg chemotherapy, ciclosporin, tacrolimus
- Radiation

Part b (5 marks)

Children with HUS are at risk of rapid decompensation with multi-organ involvement.

Complete the table outlining organ specific complications of HUS.

Model Answer

Organ/system	Complication
Renal	AKI, oliguria, haematuria, hyperkalaemia, HTN
Neurological	Seizures, encephalopathy, altered mental status
Cardiac	Myocarditis, myocardial ischaemia, hypertensive CM
Gastrointestinal/ Abdominal	Perforation, intussusception, pancreatitis, colitis, strictures, bleeding
Respiratory	Pulmonary oedema, haemorrhage

Part c (1 mark)

Name a specific therapy that can be initiated in the treatment of severe disease.

Model Answer

Plasma exchange

Part d (2 marks)

You discuss the child's presentation with the advanced trainee as part of their CBD for their WBA requirement. She asks you about the role of platelet transfusion in the context of HUS.

Please outline your response.

Model Answer

Generally not recommended due to potential to exacerbate the thrombotic process/promote platelet aggregation & thrombus formation therefore worsening the disease

Correct to >50 for operative procedures or if active bleeding

Consider transfusion if <10

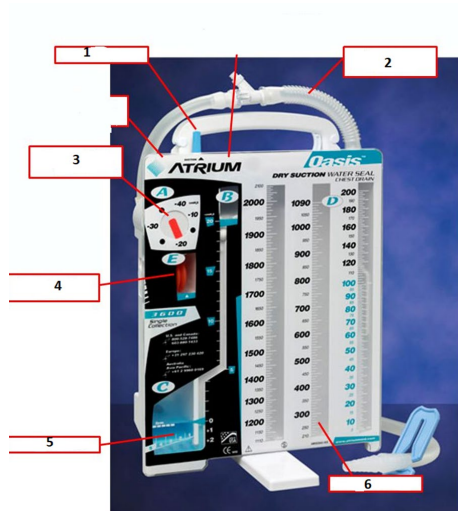
Question 6 (12 marks)

You have just inserted a small bore pigtail intercostal catheter (ICC) in a 27 year old man with a large spontaneous pneumothorax.

The ICC is connected to under water seal drainage chamber (UWSD).

Part a (6 marks)

Complete the table labelling the parts of this UWSD unit.



Model Answer

1	Suction port
2	Chest drain connector
3	Suction regulator
4	Suction monitor bellow
5	Air leak monitor
6	Collection chamber

Part b (6 marks)

Due to access block this patient remains in your Emergency Department the following day. His repeat CXR shows that the pneumothorax is unresolved.

List six further management options for this patient.

Model Answer

- Confirm ICC position, swinging/bubbling
- Ensure no leak in connections
- Continuous oxygen
- Add low wall suction (20mmHg)
- Insert 2nd ICC
- Exchange for larger ICC
- Liaise with admitting team
- CTx input for VATS pleurodesis

Question 7 (12 marks)

A 61 year old male is brought to your regional Emergency Department by paramedics following a witnessed syncopal episode. He has severe dilated cardiomyopathy for which he had a left ventricular assist device (LVAD) implanted.

He is holidaying in your local area which is approximately two hours away from his normal tertiary cardiac centre.

There are no obvious injuries following his collapse. He is alert with a GCS of 15, however is pale and diaphoretic with poor peripheral perfusion. The bedside monitors are unable to obtain a blood pressure reading.

Part a (2 marks)

What are two methods for measuring blood pressure in patients with an LVAD?

Model Answer

1. NIBP is performed with a manual sphygmomanometer and Doppler ultrasound over brachia! or radial artery
2. Invasive mean arterial pressure can be obtained by placement of an ultrasoundguided arterial line

Part b (6 marks)

List two VAD-related and four non-VAD related potential causes of hypotension in this patient.

Model Answer

	VAD-related	Non-VAD related
Causes	• Pump failure • Pump/ cannulae obstruction (thrombus or malposition) • Incorrect pump speed	• Hypovolaemia (or haemorrhage) • Sepsis • Ventricular dysrhythmias • RV failure • Tamponade • Aortic regurgitation

Part c (4 marks)

Whilst on cardiac monitoring the patient is witnessed to have several long periods of self-resolving ventricular tachycardia.

During the episodes, he feels light-headed but remains conscious.

List four therapeutic interventions which may correct this recurrent dysrhythmia.

Model Answer

1. Fluid bolus / Volume replacement (?suction event)
2. Electrolyte replacement Kand Mag
3. Rx of Myocardia I ischaemia/infarction (ECG + medical Mx)
4. Amiodarone loading+ infusion
5. Consider DC cardioversion under procedural sedation
6. Also:
 - a. Contact the VAD-coordinator at cardiac centre for advice
 - b. *Other reasonable answers...*

Question 8 (12 marks)

A 24 year old woman is brought into the Emergency Department by her mother after a two week history of increasingly bizarre behavior. She has not been going to work, has been shutting herself in her room and has been observed to be talking to herself.

Part a (4 marks)

Give four features from the history that would suggest a psychiatric cause for the presentation in this patient.

Model Answer

- Previous history of psychiatric illness
- History of noncompliance with prescribed psychiatric medication
- Onset at a young age
- Onset over weeks & months
- Describes auditory hallucinations
- Normal alertness & attention (although this could be a feature on mental state examination but will accept that can be found on history)
- Absence of any co-morbidities or accompanying illness
- Presence of major life or situational changes/stresses

Part b (4 marks)

Give four features from the history that would suggest an organic cause for the presentation in this patient.

Model Answer

- Onset over a few hours or days - acute onset
- History of seizures
- Past medical history of significance eg cardiovascular disease, trauma, lung disease, metabolic disease/disorder
- History of headache
- History of viral or flu like illness preceding symptoms
- History of fever
- Recent travel history
- History of starting new medication
- History of altered level of consciousness
- Use of recreational drugs & excessive use of alcohol

Part c (2 marks)

Prior to this presentation, she had been unwell with lethargy, myalgia and headache.

Other than bloods tests, list two investigations you will perform in the Emergency Department.

Model Answer

- CT Brain
- MRI scan
- Lumbar Puncture

(Accept either CT brain or MRI, not both)

Part d (2 marks)

The investigations performed thus far are unremarkable.

You obtain a collateral history from her mother who tells you the patient has had a recent ultrasound which shows a pelvic tumor.

Outline the significance of above mentioned ultrasound finding, and a unifying diagnosis in relation to her presentation.

Model Answer

Anti-NMDA encephalitis

Associated with pelvic tumours (usually teratomas) in 50 - 60% of cases, most cases of anti NMDA encephalitis are in young woman, better outcome is associated with early identification of the pelvic tumour & pelvic tumour removal

Question 9 (12 marks)

A 65 yo woman presents with atraumatic loss of vision in her right eye over the past 24 hours.

Part a (4 marks)

Apart from Giant Cell Arteritis (anterior ischaemic optic neuropathy) complete the following table regarding four possible diagnoses and relevant fundoscopic findings for each.

Model Answer

Diagnosis	Fundoscopy finding
CRAO	Pale retina with cherry red macula
CRVO	retinal haemorrhages, optic disc swelling, cotton wool spots, dilated and tortuous veins
Retinal detachment	may be normal, may see retinal tear, unable to see portions of retina
Vitreous detachment	as for retinal detachment
Vitreous haemorrhage	loss of red reflex, retinal view partially or fully obscured by blood

Part b (5 marks)

You suspect the patient has Giant Cell Arteritis.

List five features on history and five features on examination that would support this diagnosis.

Model Answer

History: new headache, jaw claudication, pain on hair brushing, fever, anorexia/ weight loss, malaise, hx of PMR

Examination: temporal artery tenderness, scalp tenderness, fever, clinical features of PMR, eye findings including reduced VA/ RPAD / papilloedema / haemorrhages.

Part c (3 marks)

With Giant Cell Arteritis as the most likely diagnosis, name the initial drug therapy (including dose and route) that you will prescribe for this patient, and list two early complications of this therapy.

Model Answer

Prednisone orally 40 -60mg daily until specialist review or Methylprednisolone IV 0.5-1.0 g x3 days

Complications: hyperglycaemia, psychosis/delirium, gastritis

Question 10 (18 marks)

A 76 year old man self presents to the Emergency Department with epistaxis. He describes on and off bleeding for most of the preceding day that has become heavier over the past hour.

He has a past medical history of hypertension and atrial fibrillation on apixaban.

His observations are:

HR	114/min (AF)
BP	167/95 mmhg
RR	10/min
SpO ₂	95% RA

Part a (4 marks)

List four initial first aid or topical measures that can be used to control anterior epistaxis?

Model Answer

Sit with head forward to prevent swallowing/ aspiration of blood Advise patient to spit out and not swallow blood

Suction blood/ clots from the nares or ask patient to blow nose Topical Vasoconstrictors- adrenaline/ co-phenylcaine / oxymetazoline

Continuous pressure to the anterior nares (cartilaginous part) for 15-20 minutes Cautery with silver nitrate - do not apply to both sides of the septum, may avoid in patients on anticoagulants/ antiplatelets

No evidence for application of cold to neck - sucking ice cube may reduce nasal blood flow

NOT TXA - Best evidence suggests no benefit of topical or oral in terms of preventing progression to packing

Part b (3 marks)

Bleeding does not settle with first aid measures. You are concerned that the source of bleeding is posterior. The patient is now pale.

Updated vital signs are:

HR	154/min (AF)
BP	98/65 mmhg

List three factors on physical examination that suggests a posterior source of bleeding.

Model Answer

Failure to visualize blood anteriorly Bleeding from both nares

Visualisation of blood in the posterior pharynx

Part c (2 marks)

Despite insertion of an appropriately sized Rapid Rhino, the bleeding remains uncontrolled.

List two definitive treatment options for haemorrhage control in posterior epistaxis?

Model Answer

Surgical ligation by ENT

Embolization of sphenopalatine and/ or anterior ethmoid artery by IR

Part d (2 marks)

Your provisional blood investigations return the following results:

PT	11.5 (11.0 – 13.5 secs)
INR	0.9 (0.8 – 1.1)
aPTT	32 (30 – 40 secs)

How do you interpret these coagulation parameters in a patient taking apixaban?

Model Answer

PT/ INR and aPTT are all within normal ranges however this may be seen at trough when there are still therapeutic levels of drug.

Synthesis - with apixaban these normal coagulation parameters do not exclude significant anticoagulant effect

Need anti-Xa level, apixaban level

Part e (5 marks)

List five steps in the management of life-threatening bleeding in a patient taking Apixaban?

Model Answer

Institute local haemostatic measures

Activated charcoal (50g) if DOAC taken within 2 hours

PRBC transfusion guided by Hb, estimated bleeding and haemodynamics

Consider TXA 15-30mg/kg bolus then infusion

PCC / Prothrombinex-VF 50iU/kg (limited evidence, normalises PT in healthy subjects) - discuss with haematologist

FEIBA

Maintain hydration to aid renal clearance

Cease medication

NOT specific reversal therapies (e.g. Andexanet alfa) - no RCT data, not routinely used in Australia, recommended but very few bodies with low level of evidence

NOT dialysis - not dialysable (Dabigatran only) due to high protein binding

NOT vitamin K NOT FFP

Part f (2 marks)

What two additional therapies are available for patients presenting with life threatening bleeding on Dabigatran?

Model Answer

Dialysis - Consider on setting of impaired renal function or dabigatran present in excess as indicated by aPTT > 80 seconds or a dabigatran level > 500 mg/ml

Reversal agent - Idarucizumab (Praxbind) 2 x 2.5g vials given over 5-10 minutes. Will require discussion with haematology. Only indicated if thrombin time prolonged

Question 11 (18 marks)

A 36 year old woman who is 35 weeks pregnant is brought to the Emergency Department with increasing headache and confusion.

Her vital signs are:

HR	95/min
BP	175/115 mmhg
Sats	96% RA
Temp	37.8 °C
GCS	14/15

Part a (4 marks)

Apart from pre-eclampsia, list four possible causes for her presentation.

Model Answer

- Infection - sepsis, encephalitis, UTI
- Neuro - SAH, ICH, cerebral venous sinus thrombosis, epilepsy
- Toxicology -
- Metabolic - thyroid storm, phaeochromocytoma
- Psych - psychosis

Part b (3 marks)

You suspect she has severe pre-eclampsia.

List 6 risk factors for pre-eclampsia.

Model Answer

- Hx of same
- Nulliparity
- Multiple gestation
- Autoimmune disease
- Diabetes
- Chronic HTN
- Renal disease/CKD
- FHx pre-eclampsia
- Obesity
- Age>40

Part c (6 marks)

List 4 maternal and 2 foetal complications of pre-eclampsia.

Model Answer

Maternal complications
Eclampsia
ICH
Placental abruption
HELLP
Pulmonary oedema/ARDS
DIC
Thromboembolism
Cortical blindness
Renal failure
Death
Foetal complications
IUGR
Intrauterine death
Preterm delivery

Part d (5 marks)

She has a generalised tonic-clonic seizure and is moved to the resuscitation bay.

Outline your initial management.

Model Answer

RESUS - 02, Seizure control with IV/IM midazolam 5mg (while Mg is being prepared)

PREVENTION OF FURTHER SEIZURES - Magnesium sulphate 4g loading over 20 mins followed by infusion 1-2g/h

CONTROL OF HYPERTENSION - BP control aim <160/100

IV hydralazine 5-10mg q5m up to 20-30mg, IV labetolol 10mg q10m up to 80mg, PO Nifedipine 10-20mg q45m up to 40mg, (IV GTN, IV SNP)

Liaise with Obstetrics for urgent DELIVERY

Consider IM betamethasone 12.5mg

Question 12 (12 marks)



This 40 year old man was working in the paddock of his farm.

Part a (1 mark)

What is the name of the pattern shown in this picture?

Model Answer

Lichtenburg Figures

Part b (1 mark)

What is the cause for this pattern of injury?

Model Answer

Lightning Injury/Strike

Part c (10 marks)

Complete the table listing two examples of an immediate injury affecting the following body system.

Model Answer

Cardiovascular:	cardiac arrest, can be asystole or VF
	ECG changes such as QT prolongation, ST elevation
	Hypertension
	AF
	myocardial necrosis
Respiratory:	respiratory arrest due to paralysis of the medullary respiratory centre & thoracic muscle spasm
	blast injury (pulmonary barotrauma)
	aspiration
	ARDS

Neurological:	keraunoparalysis due to ANS mediated vasospasm hypoxic encephalopathy peripheral neuropathy ICH – especially of the basal ganglia & brainstem amnesia, confusion, LOC seizure traumatic brain injury: SDH, EDH & SAH cerebral infarction cerebral salt-wasting syndrome
Eyes:	retinal detachment optic nerve injury corneal burns temporary blindness blast injury: globe rupture, corneal abrasions, corneal lacerations, orbital wall fracture
Ears:	tympanic membrane rupture sensorineural deafness tinnitus vertigo otorrhoea, microfractures
Skin:	linear burns along skin folds, sweat lines punctate burns – circular burns due to current leaving the body transient feathering/ferning patterns - Lichtenberg Figures contact thermal burns due to object in contact with skin (eg metal buckle) or fire (eg clothing ignites)
Muscle:	Compartment Syndrome Rhabdomyolysis (rare)

Question 13 (12 marks)

A 21 year old homeless man presents to your Emergency Department. Last night he was involved in an altercation with an unknown assailant.

He has a wound on his right hand after punching the other person in the mouth. He has a previously documented penicillin allergy.

Part a (3 marks)

List three of the most prevalent organisms in human bites.

Model Answer

- S.aureus,
- Eikenella corrodens,
- strep species,
- B-lactamase producing anaerobes

Part b (4 marks)

List four possible factors in this man that would make his wound high risk and necessitate the need to treat with antibiotics.

Model Answer

- >8hour delay in review
- puncture wound that can't be adequately debrided
- wound on hand
- involving deep tissues- bones, joints, tendons
- pt immune compromised or alcoholic, liver disease or DM
- open #

Part c (2 marks)

You are able to adequately clean and irrigate the wound and deemed he is safe for discharge.

What antimicrobial agent (including dose and duration) would you prescribe him.

Model Answer

Metronidazole 400mg BD 3 days + doxycycline 100mg BD 3 days or trimethoprim/ sulphamethoxazole 160/800mg BD 5 days

OR Ciprofloxacin 500mg BD 5 days + clindamycin 450mg TDS 5 days

Part d (2 marks)

List two indications for tetanus immunoglobulin in this man.

Model Answer

- not previously received 3 or more doses of a tetanus containing vaccine
- doubt about their vaccination status
- if they have HIV or they have a humeral immune deficiency

Part e (1 marks)

You decide to prescribe tetanus immunoglobulin. What dose would you prescribe?

Model Answer

250 IU as wound < 24 hours old

Question 14 (12 marks)

An 8 year old Indigenous boy presents to the Emergency Department with fever, joint pain and rash.

His vital signs are:

Temp	38 °C
HR	128/min
Sats	98% RA
RR	20/min

Examination reveals a clear chest, a systolic murmur and tonsillitis.

You suspect rheumatic fever.

Part a (3 marks)

List three differential diagnoses for his presentation.

Model Answer

- Juvenile Rheumatoid Arthritis
- Kawasaki Disease
- Sepsis: cellulitis, UTI, influenza, septic arthritis, infective endocarditis
- Drug reaction: EM Major/TEN 2.

Part b (4 marks)

Aside from the clinical features/criteria mentioned above in this patient, list four other diagnostic criteria for rheumatic fever.

Model Answer

Major: CANES

Carditis

Arthritis - polyarthritis (in Indigenous populations, monoarthritis/arthralgia counts as major)

Subcutaneous Nodules

Erythema Marginatum

Sydenham's Chorea

Minor:

ECG changes (1st deg HB)

Fever >38.5 Arthralgias/monoarthritis

Elevated ESR >= 30

History of Rheumatic fever

Accept Bold answers only****

Carditis/fever/arthralgia/rash not acceptable –already in the stem***

Part c (3 marks)

English is not a first language for this family.

List three techniques that may be used to facilitate good clinical communication in this case.

Model Answer

- Offer an interpreter or AHLO
- Use engagement that is appropriate to the area the family is from - this might include talking to family/elders, avoiding eye contact, offering gender specific staff
- Slow down, use plain English and allow time for questions
- Offer culturally appropriate written or illustrated information
- Involve culturally specific health services for discharge planning and follow up

Part d (2 marks)

The Paediatric team review the patient and plan to discharge him home.

List two key elements of follow up for this patient.

Model Answer

- IM benzathine benzylpenicillin G 1.2mil U single dose OR PO phenoxymethylpenicillin 15mg/kg BD
- Cardiology follow up with Echo

Question 15 (12 marks)

A 3 year old child is brought in after accidentally ingesting bleach.

Part a (3 marks)

List three complications of an acute corrosive ingestion and the signs you would assess for.

Model Answer

Acute complication	Signs and symptoms
Airway oedema/compromise 2' to burns	stridor, respiratory distress and drooling
Oesophageal and gastric perforation	Dysphagia, pain
Shock	either due to metabolic disruption with some corrosives otherwise haemorrhage and sepsis or losses
External injury, skin, eyes	Cutaneous/ocular burns
Sepsis 2' to acute mediastinitis	Fever, chest pain, subcut emphysema

Part b (3 marks)

Aside from corrosives, list three classes of agents including an example, where activated charcoal is unlikely to be beneficial after an acute exposure.

Model Answer

- Metals (lithium iron)
- Hydrocarbons (eucalyptus oil)
- Alcohols (methanol, ethylene glycol)
- Pesticides
- Solvents

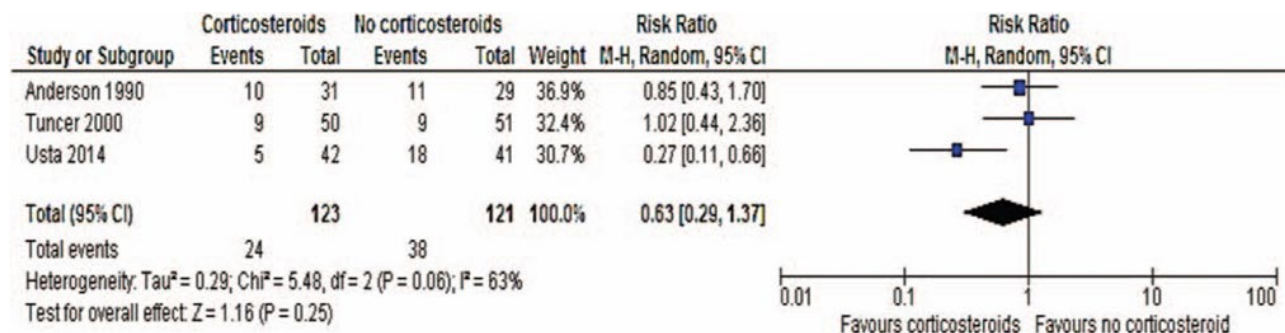
Part c (3 marks)

Steroids have been described as a therapy in the literature to reduce the rate of stricture formation.

A meta-analysis reviewed 763 publications of which 244 patients from 3 RCTs were included assessing steroid use in prevention of stricture formation.

Carefully read the details summarized in the forest plot below and answer these questions.

Provide definitions for the following in the table below.



Events mean = number of strictures

Model Answer

	Definition
Absolute risk reduction	Absolute risk is the number of events (good or bad) in treated or control group divided by the number of people in that group. Therefore absolute risk reduction would be ABSOLUTE RISK IN CONTROL - ABSOLUTE RISK IN TREATMENT GROUP. I.e the difference in events between those two groups
Relative risk (risk ratio)	ABSOLUTE RISK IN TREATMENT GROUP/ ABSOLUTE RISK IN CONTROL GROUP
Relative risk reduction	(ABSOLUTE RISK CONTROL-ABSOLUTE RISK TREATMENT) / ABSOLUTE RISK CONTROL (ie expressed as a proportion of the untreated group)

Part d (3 marks)

Summarise the three key findings of this forest plot.

Model Answer

3 RCTs, **one skewed in favour of risk reduction (Usta et al 2014 – other two do not demonstrate as clear benefit in fact Tuncer et al RR is 1.02)**

Essentially **the risk ratio is 0.63 implying that the risk of strictures is less with corticosteroid use.**

However, the **wide CI crosses 1 therefore this is not statistically significant**. Therefore, based on these pooled data from 3 RCTs, there is **no statistically significant risk reduction ($p=0.06$)** in the number of strictures in the number of cases of caustic ingestion treated with steroids.

(Be careful of the tests cited at the bottom of the plot – they are tests of heterogeneity of the data)

<https://bestpractice.bmj.com/info/toolkit/learn-ebm/how-to-calculate-risk/>

Question 16 (12 marks)

A 27 year old woman self presents complaining of weakness.

A venous blood gas has been obtained shortly after her arrival.

pH	7.49
pCO ₂	48
pO ₂	52
BE	10
HCO ₃	32
Na	134
K	2.2
Cl	91

Part a (1 mark)

Interpret the blood gas.

Model Answer

Hypochloraemic hypokalaemic metabolic alkalosis, consistent with upper GI losses

Part b (4 marks)

In regard to any patient, complete the following table identifying two causes of hypokalaemia in each of the following categories.

Model Answer

- Endocrine causes: Cushing's syndrome, Conn's syndrome (primary hyperaldosteronism), periodic paralysis in the context of hyperthyroidism, DKA, renin secreting tumours (rare)
- Renal causes: Bartter's, Gitelman's, Liddle's syndromes, RTA type 1&2, urinary diversions
- Gastrointestinal: diarrhoea, vomiting, pyloric stenosis and other upper GI obstructions, Zollinger-ellison syndrome
- Drugs (massive list!): thiazides, loop diuretics, laxatives, insulin, salbutamol, theophylline, amphotericin

Part c (2 marks)

You decide to commence the patient on oral potassium replacement.

Complete the table listing two oral formulations which can be used and the potassium content per tablet.

Model Answer

- Span K 8mmol (600mg) per tablet
- Slow K 8mmol per tablet
- Chlorvescent 14mmol per tablet

Part d (2 marks)

The patient refuses oral supplementation.

Complete the fluid order using pre-prepared solutions for intravenous potassium replacement for a patient who requires both potassium and fluid replacement.

Model Answer

Fluid type	Volume (mls)	Additive and amount	Rate (ml/hr)
0.9% saline	1000	30mmol KCL	250-500

Part e (2 marks)

Complete the fluid order using pre-prepared solutions for intravenous potassium replacement for a patient who requires potassium replacement but needs to avoid fluid overload.

Model Answer

Fluid type	Volume (mls)	Additive and amount	Rate (ml/hr)
0.29% saline	100	10mmol KCL	100

Part f (1 mark)

What other electrolyte may need replacement in order to facilitate normalisation of potassium levels?

Model Answer

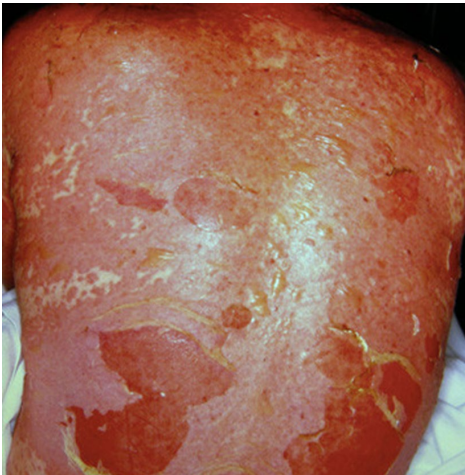
Magnesium

Question 17 (12 marks)

A 40 year old man with HIV presents with a rash. He was commenced on co-trimoxazole prophylaxis 3 days prior.

Part a (1 mark)

Describe the rash.



Model Answer

Widespread erythema

Purpuric macules

Large epidermal sheets/desquamation

Flaccid bullae

Must include three underlined descriptors for full mark

Part b (4 marks)

List four life-threatening complications of this condition.

Model Answer

- Hypovolaemic shock
- Septicaemia
- ARDS
- GI ulceration, perforation, intussusception
- Multiorgan failure
- DIC
- Thromboembolism
- Electrolyte imbalance (esp Na & K)

Part c (4 mark)

You estimate he has skin detachment of 40% of his total body surface area. He is moved to the resuscitation room where he is in severe pain.

His observations are as follows:

GCS	15
HR	140/min
BP	82/40 mmhg
RR	28/min
Sats	91% RA
Temp	34.9 °C

Outline your management priorities

Model Answer

- Analgesia
- Volume resuscitation and electrolyte correction
- Temperature control / wound management
- Referral to burns centre

Part d (1 mark)

Name an illness severity score that predicts mortality in SJS and TEN cases.

Model Answer

- SCORTEN
- ABCD-10

Part e (2 mark)

List four of their criteria.

Model Answer

The SCORTEN criteria are:

- Age > 40 years
- Presence of malignancy (cancer)
- Heart rate > 120
- Initial percentage of epidermal detachment > 10%
- Serum urea level > 10 mmol/L
- Serum glucose level > 14 mmol/L
- Serum bicarbonate level < 20 mmol/L

The risk of dying from SJS/TEN depends on the score.

- SeORTEN 0-1 > 3.2%
- SeORTEN 2 > 12.1%
- SeORTEN 3 > 35.3%
- SeORTEN 4 > 58.3%
- SeORTEN 5 or more > 90%

In 2019, a new prediction model was proposed, the ABeD-10.

A: age over 50 years (one point)

B: bicarbonate level < 20 mmol/L (one point) e: cancer present and active (two points)

D: dialysis prior to admission (3 points)

10: epidermal detachment > 10% body surface area on admission (one point)

Question 18 (12 marks)

A 40-year-old man represents to the Emergency Department with severe thoracic back pain. He has a history of intravenous drug use, and has no allergies. On examination he has reduced power in his lower limbs.

His vital signs are:

HR	90/min
BP	150/80 mmhg
RR	22/min
Sats	95% RA
Temp	38 °C
GCS	15/15

Bloods results include:

WCC	16
CRP	230

You are suspicious of epidural abscess.

Part a (4 marks)

Other than epidural abscess, list four differential diagnoses for his presentation.

Model Answer

- Discitis
- Osteomyelitis
- Cauda Equina syndrome
- Psoas abscess
- Vertebral fracture
- Aortic dissection

Part b (2 marks)

What is the most appropriate empirical antibiotic choice for his condition? Include drug name, dose and route of administration.

Model Answer

IV Cefotaxime/ceftriaxone 2g

AND IV Flucloxacillin 2g

OR IV Vancomycin 15-30mg/kg (will accept 1-2g) if MRSA is suspected

Part c (6 marks)

You review the notes from his presentation 2 days prior, when he was seen by one of the registrars during the night shift. He had a low-grade fever, was complaining of 9/10 pain and had elevated inflammatory markers with CRP 100. The impression was of muscular back pain with drug seeking behaviour. He was discharged home with no follow-up planned.

You discuss the case with this registrar.

List key elements of your approach to this situation.

Model Answer

- Ensure privacy
- Be professional
- Recognise that this can be a challenging diagnosis that is often missed at first presentation
- Recognition of risk factors, which this patient had
- Maintain high suspicion of the condition if risk factors present
- Overnight pt can be admitted to ED short stay for senior review next day
- Learning opportunity - brief education on the condition, investigation & management
- Red flags of back pain presentations
- Consider notifying medical defence organisation
- Notify HOD, DENT, mentor
- Discuss biases, patient advocacy
- Offer support

Question 19 (18 marks)

A 52 year old woman presents with severe epigastric pain radiating to her back and vomiting. She is tachycardic and diaphoretic.

Part a (4 marks)

Other than pancreatitis, list four causes for her presentation.

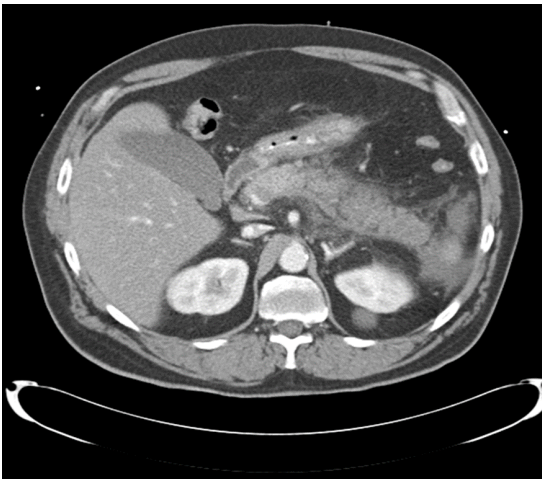
Model Answer

- Acute coronary syndrome
- Aortic dissection
- Abdominal aortic aneurysm rupture
- Biliary colic/cholecystitis
- Perforated peptic ulcer
- Oesophageal rupture
- Pulmonary embolus

Part b (4 marks)

After initial management and stabilisation, you perform a CT abdomen.

The image is below.



List four relevant findings.

Model Answer

- Bulky oedematous pancreas
- Portal vein thrombosis
- Pancreatic head lesion ?pseudocyst
- Free fluid lateral to pancreatic tail
- No radio-opaque gallstones
- No GB thickening, pericholecystic fluid
- No intrahepatic duct dilatation

Part c (2 marks)

List two severity scoring systems that can be used in the Emergency Department for Pancreatitis risk stratification.

Model Answer

- Modified Glasgow score
- BISAP
- SOFA score
- APACHE II
- Revised Atlanta CT scoring

Part d (8 marks)

List four local and four systemic complications of acute severe pancreatitis.

Model Answer

Local	Systemic
Pancreatic necrosis	SIRS/sepsis
Pseudocyst	Multiple organ failure
Pancreatic abscess	Hypovolaemic shock
Pancreatic fistula	Renal failure
Portal vein thrombosis	Myocardial depression
	Respiratory failure/ARDS/pleural effusion
	Metabolic derangement - hypocalcaemia, hypoglycaemia
	Ileus
	Death

Question 20 (18 marks)

A 5 year old boy with a background of brittle asthma is brought to the ED with marked respiratory distress.

On your assessment he has features of severe asthma and has not improved with continuous salbutamol nebulisers by the ambulance.

His observations are:

HR 140/min
RR 40/min
O2 sats 89% on 15L O2 via NRBM
GCS 15/15

Part a (12 marks)

List four additional drug treatments including dose and route with two non gastrointestinal adverse effects for each therapy.

Model Answer

Drug	Dose and route	Adverse effect
Salbutamol	5-15mcg/kg IV over 10 minutes then 1-5mcg/kg/min as an infusion	Tachycardia, metabolic acidosis, anxiety, hypoK, lactic acidosis
Hydrocortisone	4mg/kg IV	Unstable BSLs, long term growth retardation, delirium/psychosis, osteoporosis
Magnesium	0.1-0.2mmol/kg over 20 minutes IV	Hypotension, flushing, depressed reflexes, muscle weakness
Aminophylline	10mg/kg over 60 minutes (+ infusion)	Tachycardia, restlessness, headache, irritability, insomnia
Ipratropium	250mcg neb every 20 minutes x3 then q4hrly OR 4 puffs MDI	Dry mouth, tachycardia, other anticholinergic SFX
Adrenaline	0.1mcg/kg max 0.5ml 1:1000 IM Rpt 5 minutes	Tachycardia, anxiety, headache, palpitations, lactic acidosis, hypertension, hypokalaemia

Part b (6 marks)

Despite maximal asthma therapy and a trial of non-invasive ventilation the child requires intubation. Post intubation the child's oxygen saturations drop and the high airway pressure alarm on the ventilator sounds.

List six causes and your action to remedy this possible issue.

Model Answer

Cause	Action
Misplaced ETT	Check ETCO ₂ trace, remove ETT if unsure of correct position
Mucous in plug ETT	Pass suction catheter down ETT to clear/ chest physio
pneumothorax	Decompress PTx- needle decompression, pigtail catheter
Severe bronchospasm	Paralysis, deepen sedation, maximise anti-asthma therapy- ?add ketamine infusion
Patient ventilator dysynchrony	Paralyse
Anaphylaxis	Adrenaline 10ug/kg IM, fluid bolus
Breath stacking	Remove from ventilator, squeeze chest, lower resp rate

Question 21 (12 marks)

A 10 year old girl presents to Emergency Department with headache and vomiting. She has a history of hydrocephalus and has a ventriculo-peritoneal shunt in-situ.

Part a (4 marks)

Other than infection, list four complications associated with VP shunts.

Model Answer

Mechanical obstruction: (specifying one of the below)

- Proximal obstruction due to debris in the shunt (cellular debris or granulation tissue), migration of catheter into brain parenchyma
- Distal obstruction: kinking or clogging of the tube, shunt fracture, migration of the tube

Disconnection of any of the elements of the V-P shunt

Shunt valve defect

Over-drainage – slit ventricles syndrome, intracranial hypotension

SDH

Abdominal problems – bowel perforation due to tube migration, perforation of other organs eg bladder, scrotum, peritonitis, inguinal hernia, CSF pseudo cysts in the abdomen

Part b (2 marks)

You suspect she has a VP shunt infection.

List two organisms most commonly associated with VP shunt infection.

Model Answer

Must include Staph Epidermidis (60%)

Staph. Aureus (20%),

E. Coli (5%)

Part c (2 marks)

List the appropriate antimicrobial treatments including route and dose.

Model Answer

Vancomycin, IV, 25-30mg/kg loading dose

Ceftazidime, IV, 50mg/kg up to 2g

OR

Cefepime, IV, 50mg/kg up to 2g

Part d (4 marks)

She has worsening headache and vomiting. You suspect she has raised intracranial pressure.

List four management options to reduce her raised intracranial pressure.

Model Answer

Analgesia (with appropriate examples)

Antiemetics (with appropriate examples)

Head up 30°

Tap shunt

Mannitol/HTS

Question 22 (12 marks)

A 53 year old man presents from work after a 150kg pipe fell onto his foot, forcing the foot in plantar flexion. He is otherwise well and this is an isolated injury.

This is a photograph of his injury:



Part a (4 marks)

List four specific components that you will assess in your physical examination of his foot.

Model Answer

Dorsal pedis pulse, perfusion/cap refill in toes

Integrity of toe extensors – EHL and EDL and fibularis tertius– can he extend hallux and other toes, evert foot

Integrity of peroneal (fibular) nerve – superficial (dorsum of foot) & deep (first web space)

Evidence of foot compartment syndrome – pain on passive stretch of toe flexors

Evidence of extension into ankle joint

Must include one specific tendon, vessel and nerve to get full marks

Part b (3 marks)

An 'on table' x-ray of his foot is performed. List three abnormalities on this x-ray.



Model Answer

Gas in the soft tissues

Fracture of proximal 5th metatarsal

Widening of lis franc joint

Possible subluxation of mid foot joint (talonavicular and calcaneocuboid joints)

Soft tissue swelling

Must have bold for full marks

Part c (4 marks)

Describe four important interventions that you will perform in your further management of this patient in the Emergency Department. Give drug doses and routes where appropriate.

Model Answer

Analgesia – drug and dose

Tetanus immunisation assessment and management (ADT +/- TIG)

Antibiotic cover – drug and dose

Wound management – wash, wet dressing, immobilise and elevate

Part d (1 mark)

List two clinical features that would suggest that the patient is developing a foot compartment syndrome.

Model Answer

Disproportionate or worsening foot pain

Pain on passive stretch of intrinsic foot muscles (esp toe flexors)

Loss of two point discrimination or progressive paraesthesia

(would not accept loss of pulse)

Question 23 (12 marks)

An 88 year old woman is brought to Emergency Department having been found collapsed at home. On arrival her rectal temperature is 29 °C.

Part a (6 marks)

Complete the following table classifying the three techniques for rewarming.

Give an example of one method for each technique, and a potential disadvantage and likely rate of rewarming for that method.

Model Answer

Technique	Specific method	Potential disadvantage	Expected rate of re-warming
Passive external re-warming	Remove wet clothes Reflective blanket	May not work if pt unable to generate heat	
Active external re-warming	Bair hugger or warm blankets or heating pads	Risk of burns, risk of afterdrop	
Active internal re-warming	Warm iv fluids, humidified air, ICC/bladder/gastric warm lavage, ECMO,	Fluid overload, procedural complications	

- Shivering 1.5° C/hr
- Warming Blanket 2° C/hr
- Warm O2 1 °C/hr with mask; 1.5° C/hr ET tube
- IV Fluids do not add, but do not take away either
- Peritoneal Lavage 3° C/hr
- Thoracic Lavage with Chest Tubes 3-6° C/hr
- Cardiac Bypass 9-18° C/hr

Part b (3 marks)

List three investigations and their rationale to help determine the cause of pacemaker dysfunction.

Model Answer

- Osborne/J waves
- Bradyarrhythmias
- Shivering artefact
- Prolongation of all intervals
- Malignant tachyarrhythmias

Part c (3 marks)

List three endocrine causes of hypothermia.

Model Answer

- Hypopituitary
- Hypoadrenalism
- Hypothyroidism
- Hypoglycaemia

Question 24 (12 marks)

A 2 year old boy is brought to the Emergency Department with a 6 day history of fever. He has had reduced oral intake and looks miserable.



Part a (2 marks)

Based on this picture, list two differential diagnoses other than Kawasaki Disease.

Model Answer

Must include a Group A Streptococcal infection

Group A Streptococcal infections:

Tonsillitis, scarlet fever, acute rheumatic fever

Viral infections including:

EBV, CMV, Adenovirus, HHV-6, COVID-19

Measles

Toxic Shock Syndrome:

Staphylococcal or streptococcal, Staphylococcal Scalded Skin Syndrome

Stevens-Johnson Syndrome

Drug reaction

Part b (8 marks)

You suspect the child has Kawasaki Disease.

Complete the table below listing four criteria with an associated clinical feature for the diagnosis of Kawasaki Disease.

Model Answer

Criterion	Features of criterion
Conjunctival injection/Conjunctivitis	Bilateral, non-purulent, often with limbic sparing, usually begins shortly after fever onset
Rash	Erythematous, polymorphous rash involving trunk & extremities, usually within the first few days, variable appearances but usually maculopapular, scarlatiniform or erythema multiforme like
Oral Changes	Strawberry tongue, red, dry & cracked lips, diffuse erythema of the oropharyngeal mucosa, oral ulcers & pharyngeal exudates are not a feature of Kawasaki
Extremity Changes	Redness of the palms &/or soles, painful oedema of the hands &/or feet, in the 2 nd week of the illness progresses to desquamation of the hands &/or feet
Lymphadenopathy	Cervical, usually unilateral, tender, >15mm diameter, less common & usually seen in older children

Part c (2 marks)

After discussion with patient's family/NOK and palliative care team decision is made to initiate end of life measures for this patient in your ED.

List four medications (including dose and route) with rationale that you would prescribe for this patient to support palliation.

Model Answer

Intravenous Immunoglobulin (IVIg), 2g/kg infusion over 10 -12 hours

Aspirin, 3 – 5mg/kg orally, once daily dose

(If Corticosteroids given as answer, must be caveat to their use as limited evidence - considered in children <1 year of age, severe initial presentation of Kawasaki & in relapsed Kawasaki or Kawasaki resistant to initial treatment, can be 3 days of high-dose pulsed steroids or 2 – 3 weeks of tapering prednisolone)

Question 25 (12 marks)

A 29 year old woman with a history of epilepsy presents after ingesting 90 tablets x 200mg. She weighs 60kg.

Part a (4 marks)

Complete the table describing the dose related risk assessment for valproate overdose.

Model Answer

Dose	Clinical features
< 200mg/kg	Mild drowsiness, ataxia or asymptomatic
200 - 400mg/kg	CNS depression
400 - 1000mg/kg	Coma and multisystem toxicity
> 1000mg/kg	Life threatening with coma, cerebral oedema and multiorgan failure including hypotension, lactic acidosis, hyperammonaemia, hyponat, hypocalc and bm suppression

Part b (4 marks)

List four blood tests you would perform including your rationale.

Model Answer

Blood test	Rationale
Venous blood gas	metabolic acidosis and hyperlactataemia plus BSL
EUC	Serum sodium and also renal fxn if considering dialysis, hypernatraemia
Valproate level	Will need serials every 6 hours until returns to normal (in those with altered conscious state)
Paracetamol level	Screening test for co-ingestions
Ammonia level	Hyperammonaemia
LFT	Evidence of hepatotoxicity
FBC	BM suppression
bHCG	Screening for pregnancy

Part c (2 marks)

List two indications for dialysis in valproate poisoning.

Model Answer

pH < 7.1

cerebral oedema or shock ie lactic acidosis and instability

Valp conc >1000mg/L (7000micromol/L)

Part d (2 marks)

Sodium Valproate is known to be teratogenic.

Other than anti-epileptics, list four teratogenic drugs.

Model Answer

ACEi

Warfarin

Angiotensin 2 inhibitors

Tetracyclines

NSAIDs

Amiodarone

Aminoglycosides, gentamicin

MTX

Amphotericin

Thalidomide

Question 26 (12 marks)

A 3 year old boy has been brought in to your Emergency Department with a button battery in his left nostril.

Part a (6 marks)

List six different techniques for removal of nasal foreign bodies.

Model Answer

Forceps (Alligator forceps/ toothed forceps)

Balloon catheter

Suction catheter

Glue on stick

Parents kiss

Jobson Horne probe

Self-blow (may be difficult in this case)

BVM

<https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/guidelines/CHQ-GDL-60022-foreign-body-in-nose.pdf>

Part b (2 marks)

List two potential local complications of delayed button battery extraction from the nasal cavity.

Model Answer

Septal perforation

Nasal Meatal stenosis

Inferior turbinate necrosis

Alar cartilage collapse

Part c (4 marks)

You decide to perform procedural sedation with ketamine to facilitate safe removal of the battery.

List four significant complications associated with ketamine.

Model Answer

Laryngospasm

Anaphylaxis

Porphyria

Aspiration

Emergence phenomena/nightmares

Seizures

Muscle rigidity

Question 27 (12 marks)

A 24 year old woman presents with abdominal pain and vaginal bleeding. Her last menstrual period was 8 weeks ago, she has not done a pregnancy test yet.

Her vital signs are normal.

Part a (2 marks)

Complete the table listing the discriminatory quantitative bHCG levels required for transvaginal and transabdominal ultrasound in early pregnancy.

Model Answer

Ultrasound method	bHCG discriminatory level (IU/L)
Transvaginal	>1000-1500
Transabdominal	>5500-6500

Part b (4 marks)

As a part of your assessment you have arranged for quantitative bHCG and formal transvaginal ultrasound for her.

Complete the following table with relevance of serum bHCG to the ultrasound interpretation and subsequent management.

Model Answer

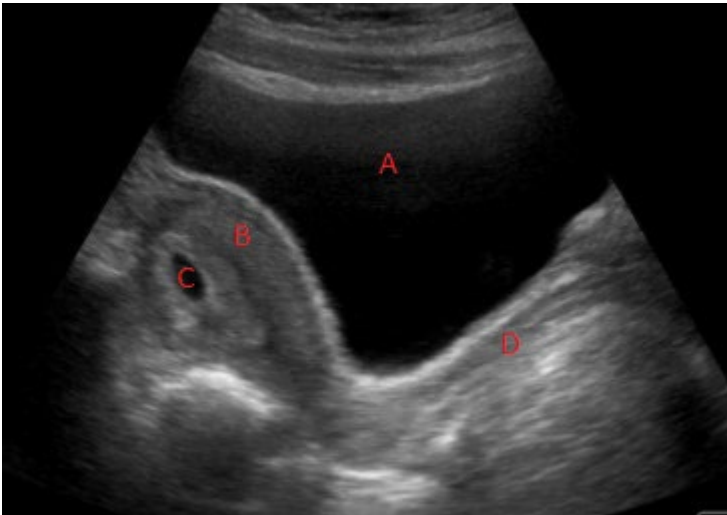
bHCG level	Relevance to ultrasound	Relevance to management
Less than 1500 IU/L	Gestational sac might not be visible- both ectopic and intrauterine pregnancy possible	Needs close follow up and repeat USS and Bchg
More than 1500 IU/L	Should see intrauterine gestation – If no intrauterine gestation Ectopic pregnancy is likely	Likely to need laparoscopy

Part c (4 marks)

Her bHCG level returns at 7400 IU/L.

This is an image of her ultrasound.

Identify the labelled structures.



Model Answer

A – bladder

B – uterus, myometrium

C – gestational sac

D – vagina

Part c (2 marks)

List two ultrasound features of failed pregnancy.

Model Answer

Foetal sac smaller than expected

Absent fetal heart on TAUS despite HCG > 6000 or CRL 7mm or more

Absent yolk sac on TVUS with a gestational sac of 12 mm or more

Mean gestational sac diameter < 25.0 mm in diameter on TVUS and no visible foetal pole