



Model Answers — Monash Practice SAQ Trial 2026.1

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Question 1 (12 marks)

A 20 yo male presents after being hit to the left eye with a cricket ball as shown:



Part a (3 marks)

List two (2) abnormal findings in this photo and the likely diagnosis.

Model answer

- Left periorbital haematoma
- Left eye inability to look up - entrapment of inferior rectus muscle
- Mild scleral/conjunctival injection
- Mild swelling around L eye

0.5 Subconjunctival haemorrhage since looks more like conjunctival/scleral injection

Diagnosis - blowout fracture of floor of left orbit with inferior rectus entrapment (need to name muscle)

Don't accept negatives - symmetrical pupil, no obvious penetrating injury, can't comment on exophthalmus, Seidel's sign

Incorrect – CN 3 palsy, superior rectus entrapment, Hard to Dx proptosis on anterior photo, Can't assess pupil size since can't view R pupil

Part b (3 marks)

List three (3) steps in managing this diagnosis.

Model answer

- **Supportive:** (max 1)
 - Analgesia (avoid NSAIDs if bleeding risk) paracetamol, oxycodone, ? why Regs love fentanyl so much?
 - Antiemetics (reduce Valsalva)
 - Gentle ice pack to the orbit for 24–48 hours.
 - Elevate head of bed
- **Specific:**
 - Avoid nose blowing due to risk of worsening orbital emphysema (cough/sneeze with open mouth to avoid an increase in sinus pressure, which may displace non-sterile material through fracture and into orbit)

- Broad-spectrum oral antibiotics due to suspected sinus communication eg Augmentin Duo bd for 7 days
- Nasal decongestant spray
- **Disposition:**
 - Refer to plastic surgery or maxillofacial surgery for **surgical orbital fracture repair** - is usually performed 7 to 14 days after injury, admission not indicated for isolated injury
- **0.5** 'iv artis' without name
- **Not-** tetanus, CT and IOP (its an Ix), slit lamp(its Ex)

Part c (2 marks)

What local neurological complication would you examine for and how would you do this?

Model answer

- Complication: Inferior orbital nerve neuropraxia
- Examination: Abnormal sensation over the cheek, upper lip or upper medial left teeth -
- Upper central incisor (21), lateral incisor (22) and canine (23)

Part d (4 marks)

You are worried about orbital compartment syndrome complicating this injury. List four (4) examination findings that suggest this diagnosis.

Model answer

- Proptosis
- Tense orbit: difficulty opening eyelids with your fingers
- Haemorrhage confined to the orbital rim
- Chemosis (conjunctival swelling)
- Raised intraocular pressure and resistance to retropulsion: press your index finger against each globe through the closed lids or use of Tonometry

Normal IOP: 10–21 mmHg

30–40 mmHg: concerning, especially with trauma or orbital haemorrhage

≥ 40 mmHg: highly concerning for OCS → emergency decompression indicated

≥ 50–60 mmHg: very high risk of rapid optic nerve ischemia and permanent vision loss

- Limited ocular motility, i.e. pain or diplopia
- **Reduced visual acuity:** if severely reduced vision, consider immediate treatment or **Relative Afferent Pupillary Defect (RAPD):** if present, consider immediate treatment – don't accept both together since they are a continuum
- Fixed mid-dilated pupil
- Colour vision impairment (red desaturation)
- Visual field defect
- Oculocardiac reflex - bradycardia, nausea/vomiting

Reference:

https://aci.health.nsw.gov.au/_data/assets/pdf_file/0013/155011/ACI-Eye-Emergency-Manual.pdf
pages 57-60

Question 2 (12 marks)

You have been advised that a trainee working in the Emergency Department has accessed the medical records of another trainee without a clinical role in that patient's care.

Part a (4 marks)

List your four (4) immediate actions.

Model answer

- Confirm the facts
 - Verify access via audit logs (what was accessed, when, frequency)
 - Confirm no legitimate clinical role
- Immediate privacy protection
 - Ensure no further access occurs
 - Escalate to Health Information / Privacy Office
- Assess urgency
 - Any ongoing risk to patient or staff?
 - Any evidence of dissemination or misuse?
- Maintain confidentiality
 - Limit knowledge to those with governance responsibility
 - Avoid informal discussion or assumptions

Part b (4 marks)

List four (4) important process issues relating to the investigation of the breach.

Model answer

- Formal investigation
 - Follow hospital policy for privacy breaches
 - Involve Medical Administration / HR / Privacy Unit
- Procedural fairness
 - Notify the trainee of concerns
 - Offer opportunity to respond
 - Support person allowed
- Documentation
 - Clear, contemporaneous records
 - Objective language
- Mandatory reporting considerations
 - Assess threshold for escalation (eg serious misconduct)
 - Consider college/employer obligations if required

Part c (4 marks)

List four (4) key points to address in managing the trainee.

Model answer

- Assess intent and context
 - Curiosity vs concern vs malicious intent
 - Prior behaviour or pattern
- Proportionate response
 - Education and remediation for minor, first-time breaches
 - Formal warning or disciplinary pathway if serious/repeated

- Support and wellbeing
 - Acknowledge stress, curiosity, or misunderstanding
 - Avoid shaming or punitive tone
- System learning
 - Reinforce privacy education for all trainees
 - Review onboarding and EMR training
 - Audit access controls if required

Question 3 (12 marks)

A 65 kg, 54 year old female without chronic medical issues is brought in by ambulance after a witnessed cardiac arrest at home. Her husband commenced CPR immediately after she collapsed.

She has been recovering from a fractured tib/fib following an MCA three weeks previously.

The initial ECG with the ambulance service showed PEA without acute OMI changes.

In the ED POCUS shows a dilated RV with positive McConnell's sign. The IVC is dilated. Standard ALS including drugs is commenced in your resuscitation bay.

Part a (2 marks)

Prescribe the definitive medical treatment for the most likely cause of her cardiac arrest. Include the minimum CPR duration required after administration to ensure efficacy.

Model answer

- Alteplase 50mg IV push then CPR for 15 minutes. Second dose 50mg at 15 minutes if no ROSC. Accept 15-30 minutes CPR duration
- Tenecteplase (based on 65kg weight) 35mg push (7000units) then 30 minutes CPR.
- Accept 30-45 minutes CPR duration

Part b (4 marks)

Following medication administration and ongoing CPR, ROSC is achieved. The patient has been successfully intubated. Current vital signs:

HR	110 bpm
BP	140/95 mmHg
SpO ₂	95% on FiO ₂ 0.5

Approximately 45 minutes later the patient deteriorates:

HR	130 bpm
BP	85/45 mmHg
SpO ₂	95 % on FiO ₂ 0.5

You initiate IV fluids and vasopressor support, then perform a RUSH protocol POCUS to identify the cause of her deterioration.

List four (4) areas you would assess in the RUSH protocol for this patient and one (1) key finding you would look for in each.

Model answer

- Heart- Pericardial tamponade/eWUSion, Signs of PE recurrence, Hyperdynamic heart in hypovolaemia or distributive shock (anaphylaxis to drugs). Accept looking for wall motion abnormalities.
- IVC- Signs of hypovolaemia from bleeding or distributive shock vs distended in recurrence of PE, Tension Ptx/tamponade3,
- Lungs- Tension pneumothorax, haemothorax (Bleeding from CPR), pulmonary contusion/consolidation (From CPR)

- Abdomen- Intra-peritoneal fluid (bleeding from CPR)

Must say area and relevant finding to score full mark. Either alone 1/2 mark

- NB: Aorta not relevant to this patient- so no marks
- Maximum one mark for multiple answers for the same area e.g. parts of the abdomen/pelvis, or different views of the heart if looking for the same diagnosis.
- “FELS” and “FAST/eFAST” are not “areas” and so will not score.

Part c (6 marks)

Your POCUS findings are inconclusive, so you proceed to CT, which reveals bleeding secondary to resuscitation-related trauma. You initiate a blood transfusion.

List six (6) ED steps to reverse your initial treatment medication prior to definitive interventional radiology.

Model answer

- Cease TPA/heparin or other anti-coagulants
- Cryoprecipitate 10 Units Aim level >1.5g/L
- TXA 1-2g IV
- Platelets to keep level >50-100
- DDAVP (accept but probably not relevant here unless she has been given anti-platelet agents)
- Protamine 1mg/100units of heparin administered in prev 4 hours or 1mg/mg of clexane in prev 8 hours
- FFP 2units Q 6/24
- PCC 50units/kg
- Consider Factor VII

Allowed protamine if specifically said reversing any hepain/clexane given

- No marks for resus end points such as pH, Calcium and temp.
- No marks for blood transfusion (Not reversal and already given in stem)
- No marks for calling haematologist
- Need a dose or end point for drugs to score full mark. ½ for just drug name without qualification.

Question 4 (18 marks)

A 14 year old girl is referred to your tertiary ED by her GP with concerns for a new diagnosis of anorexia nervosa.

Part a (6 marks)

List six (6) specific, focussed questions on history that are important to establish in a new diagnosis of anorexia nervosa.

Model answer

- Body image/weight/fear of weight gain
- Dietary history: type, quantity intake, binge
- Eating behaviours: restricting, rituals, calorie counting, binge/purge
- Exercise, laxatives
- Current weight/weight loss
- Symptoms: syncope, dizzy
- Psychosocial screen

Part b (6 marks)

List the six (6) criteria (with values) that would lead to likely admission to hospital.

Model answer

- Wt loss >15% in 3-6months or >1kg/week
- BMI <70% expected
- HR <50, postural tachy >50
- SBP < 80 or drop >20
- ECG – QT >450msec or acute ECG changes
- Biochem, hypoglycaemia <3
- Other : hypothermia <35, recurrent syncope, no food/fluids 48hrs, self harm/suicidal

Hypophosphataemia (<0.9 mmol/L)

Hypokalaemia (<3.0 mmol/L)

Hypoalbuminaemia

Hypomagnesaemia

Hypoglycaemia (<3.0 mmol/L)

Hyponatraemia (<130 mmol/L)

Hypocalcaemia

Transaminases >3x normal

Part c (6 marks)

Describe the components of an adolescent mental health screening tool.

Model answer

HEADSS or similar: Home, Education/employment, Activities, Drugs, sexuality, suicide/dep, safety

HEADS-ED	0 No action needed	1 Needs action but not immediate	2 Needs immediate action
H ome <i>Example: How does your family get along with each other?</i>	○ Supportive	○ Conflicts	○ Chaotic / dysfunctional
E ducation <i>Example: How is your school attendance? How are your grades?</i>	○ On track	○ Grades dropping / absenteeism	○ Failing / not attending school
A ctivities <i>Example: What are your relationships like with your friends?</i>	○ No change	○ Reduced / peer conflicts	○ Fully withdrawn / significant peer conflicts
D rugs & alcohol <i>Example: How often are you using drugs or alcohol?</i>	○ None or infrequent	○ Occasional	○ Frequent / daily
S uicidality <i>Example: Do you have any thoughts of wanting to kill yourself?</i>	○ No thoughts	○ Ideation	○ Plan or gesture
E motions, behaviours, thought disturbance <i>Example: How have you been feeling lately?</i>	○ Mildly anxious / sad / acting out	○ Moderately anxious / sad / acting out	○ Significantly distressed / unable to function / out of control / bizarre thoughts
D ischarge resources <i>Example: Do you have any help or are you waiting to receive help (counselling etc)?</i>	○ Ongoing / well connected	○ Some / not meeting needs	○ None / on waitlist / non-compliant

Question 5 (12 marks)

A 65 year old female presents with 15 minutes of confusion while at the gym, described by her husband as “repeatedly asking what she was doing” and “walking in and out of the room aimlessly.” This occurred 2 hours ago and she can now vaguely recall being driven into the local Emergency Department.

You suspect a diagnosis of transient global amnesia.

Part a (6 marks)

List six (6) clinical criteria (on history or examination) required to diagnose this condition.

Model answer

	Criteria
Related to event	• The episode was witnessed and reported • Dysfunction is limited to repetitive queries and amnesia • Obvious anterograde amnesia during the episode • Episode lasts hours to a day OR resolved within 24 hours • Absence of clouding of consciousness
History	• No past history of head injury • No past history of epilepsy
Examination	• No focal neurological signs or deficits • No features of epilepsy/seizures

- *Also accept: no alternate cause*

Part b (4 marks)

List the four (4) most important investigations you would perform, with rationale.

Model answer

- CT/CTA/CT perfusion - to rule out stroke/vascular pathology
- Bloods:
 - FBE/CRP - infection
 - UEC - hypoNa
 - VBG/glucose - hypoglycaemia
 - LFTs (accept ETOH)
- ECG - to exclude AF
- MRI/MRA - may show punctate hippocampal lesions on DWI (transient and non-specific)
- EEG - typically normal

Part c (2 marks)

What do you advise the patient and family regarding the possibility of recurrence and prognosis?

Model answer

- Small recurrence rate (15%)
- No increased mortality

Question 6 (12 marks)

An adult patient presents with severe left sided abdominal/ flank pain with radiation down towards the groin.

Part a (4 marks)

List four (4) sonographic features of obstructive renal colic.

Model answer

- Hydronephrosis (grade 1-4)
- Hydroureter (>3mm)
- Absent ureteric jet
- Large Ureteric calculi (>5mm usually >7mm)
- Perinephric fluid (renal sweating)
- Probe tenderness over kidney - accepted

Not accepted: hydronephrosis and renal pelvis dilatation as two separate answers. One mark for one or the other

Part b (3 marks)

List three (3) sonographic terms used to identify and confirm the presence of a renal calculus.

Model answer

- Echogenic structure
- Posterior acoustic shadowing
- Comet tail artifact (reverberation)
- Twinkle artifact on colour Doppler or Colour comet tail artefact

Not accepted: 'radiopaque', 'bright', hyperdensity' 'size', 'posterior enhancement'

Part c (3 marks)

List three (3) renal conditions, or conditions affecting the kidneys which may be mistaken for hydronephrosis.

Model answer

- Para-pelvic cysts
- Extra-renal pelvis
- Prominent renal vessels
- Pregnancy
- High urine flow (diuresis)
- Over hydration/full bladder
- Congenital megacalyces
- Multi dysplastic kidneys
- Renal duplication
- Congenital hydroureter
- Complicated pyelonephritis

Part d (2 marks)

What is the correct ultrasound probe to use for the above diagnosis and why?

Model answer

1. Curvilinear probe-must say CV probe and either a or b
 - a. Low frequency-better depth penetration
 - b. Larger footprint (for large organs)

Question 7 (12 marks)

A 31 year old female presents to ED with signs of gamma-hydroxybutyrate (GHB) withdrawal.

Part a (3 marks)

List three (3) clinical features of severe GHB withdrawal.

Model answer

- Hallucinations
- Seizures
- Confusion/delirium
- Paranoia
- Muscle rigidity
- Hyperthermia
- Rhabdomyolysis
- Acute renal failure
- NB will not accept signs of mild withdrawal eg tremors, nausea

Part b (4 marks)

List four (4) risk factors for severe GHB withdrawal.

Model answer

- < 4 hours between doses, or at least 6x/day
- Needing to dose at night
- High doses >15ml/day -30mls/day
- History of severe withdrawal
- Current other drug dependencies (BZD, ETOH)

Part c (2 marks)

Prescribe two (2) drugs from different categories that are used to initially manage GHB withdrawal. Include doses and timing.

Model answer

- Diazepam 20mg orally up to 60mg 1/24 then 10-20mg 1/24
- Baclofen 25mg orally TDS
- Olanzapine 10mg max 30mg in 24 hours
- NB half mark if correct drug but wrong dose. Important to recognise that high doses up to 120mg diazepam often required. Have to include diazepam for full mark.

Part d (1 mark)

There is no improvement in symptoms despite maximal first line drug therapy. List your second line drug therapy.

Model answer

- Phenobarbitone
- NB antipsychotics are adjunct not second line

Part e (2 marks)

State two (2) ACEM recommendations regarding models of care and supporting infrastructure to treat patients with co-occurring Alcohol and other drugs (AOD) and mental health conditions in ED.

Model answer

- Embedding AOD specialists in ED
- Following SBIRT (Screening, brief intervention, response and treatment) model
- Comprehensive referral pathways for OP management
- Purpose built behavioural assessment rooms

References

- https://acem.org.au/getmedia/ceaf21fd-fedb-46e3-bcab-333b58f63c13/S43_Alcohol_Policy_Statement_Jul-16.aspx
- [https://www.austin.org.au/Assets/Files/GHB%20Withdrawal.July%202023\[1\].pdf](https://www.austin.org.au/Assets/Files/GHB%20Withdrawal.July%202023[1].pdf)
- <https://www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/Clinical+Resources/Clinical+Programs+and+Practice+Guidelines/Substance+misuse+and+dependence/Substance+withdrawal+management/GHB+withdrawal+management>

Question 8 (12 marks)

A mother brings her 4 month old son into your paediatric ED. He has been fussy, with a runny nose, cough, and fever for the past 5 days. He was born full-term in Australia, but they have been visiting family in the Pacific for the last 2 months. The examination is significant for a temperature of 40 °C, rhinorrhoea, bilateral conjunctival injection, and a maculopapular rash over his face, trunk and extremities.

Part a (3 marks)

Apart from measles, list six (6) cardinal infective differentials that should be considered.

Model answer

- Malaria
- Dengue
- Typhoid
- Meningococcaemia, disseminated bacterial sepsis
- Influenza, COVID, other novel respiratory viruses
- Other travel related illnesses: Rickettsial infections, Leptospirosis, Chikungunya
- Other common viral pathogens: EBV, CMV, parvovirus, etc.

Part b (3 marks)

Other than pneumonia, list three (3) measles-specific complications.

Model answer

- Otitis media
- Severe dehydration / diarrhoea / gastroenteritis
- Myocarditis
- Keratitis / blindness
- Acute encephalitis
- SSPE

Part c (6 marks)

State your six (6) key priorities in the overall management of this patient's care whilst in your ED.

Model answer

- Unsure appropriate supportive clinical care; analgesia, fluids, oxygenation, etc.
- Management of specific complications, eg. antibiotics for pneumonia.
- Negative pressure isolation / aerosol precautions.
- Admission for ongoing support care; Infectious disease / paediatric team.
- Notification to the communicable disease / infection prevention unit.
- Notification to Department of health notification for suspected cases.
- Vaccination recommendations for non-immune contact within 72hrs.
- Additional IG for pregnant or immunocompromised contacts within 72hrs.
- Consideration of staff contacts / staff exposure management.

Question 9 (18 marks)

You are a consultant in a tertiary, metropolitan ED. Robert Smith is a 22yo man who has presented via ambulance after collapsing during a half marathon.

Part a (18 marks)

Complete the table below with history, examination and ECG features of the conditions listed. Some conditions will require more than one examination or ECG feature – fill in the table as indicated.

Model answer

	History feature	Examination finding	ECG feature
Hypertrophic Cardiomyopathy	exertional pre-syncope on other occasion, exertional dyspnea, orthopnoea, PND, CP, palps. FHx SCD	Displaced apex beat, systolic murmur inc with hand grip and valsalva, S4 or split S2	inc precordial voltages, non-specific ST and T abnormalities. Dagger-like Qs inferiorly/laterally. P mitrale. SVT/AF/ventricular dysrhythmias
Brugada Syndrome	M:F 4:1 in adults, nocturnal agonal resp, syncope. FHx SCD. South East Asian heritage		ECG – Type 1: Coved ST elevation in R precordial leads with J wave/STE >2mm followed by negative T in more than one of V1-3 Also T2 and 3 patterns. But only T1 is diagnostic with the clinical criteria as well.
Arrhythmogenic right ventricular dysplasia	Hx: F>M (3:1). Greek/Italian heritage, exertional palps/fatigue/syncope, FHx SCD	Ex – late – signs of RV failure	ECG - Epsilon wave (most specific finding) T wave inversions in V1-3 Prolonged S-wave upstroke of 55ms in V1-3 Localised QRS widening of 110ms in V1-3 Paroxysmal episodes of ventricular tachycardia with LBBB morphology
Long QT Syndrome	Hx – QT prolonging drugs, congenital hearing loss, FHx SCD		QT >450ms/500ms (inc risk SCD)

Wolff-Parkinson-White Syndrome	Hx – palp, dizziness, SOB, syncope		PR interval <120ms Delta wave – slurring slow rise of initial portion of the QRS QRS prolongation >110ms ST Segment and T wave discordant changes Pseudo-infarction pattern
Catecholaminergic polymorphic VT	Hx – syncope during exercise/emotional distress, FHx SCD		normal at rest, PVCs first then VT

Question 10 (12 marks)

A 67 year old man with a history of Myasthenia Gravis has been brought in by ambulance with gastroenteritis. He has had vomiting and diarrhoea for 24 hours and is clinically dehydrated.

He has no other past medical history and his only regular medications are pyridostigmine and prednisolone 5mg daily.

His vital signs are:

HR 100 bpm
Sats 98% on air
BP 88/50 mmHg
Temp 38.6 °C

Part a (12 marks)

List four (4) potential complications that may arise in the course of this patient's illness and one way in which you would monitor for and manage each complication.

Model answer

Acute renal failure secondary to dehydration and ongoing GIT losses	Check UEC for elevated creatinine, rising lactate due to hypo perfusion
	IV fluids N/Saline 1L stat followed by 1-2hourly bags aiming SBP >90 systolic, U/O 0.5ml/kg/hr Low threshold for pressors e.g. noradrenaline
Respiratory failure or myasthenic crisis	Monitor: clinically assess WOB, PaCO ₂ on VBG, bedside resp function testing PEFR
	Manage: low threshold for early intervention with NIV followed by intubation
Sepsis/multiorgan failure, immunocompromised	Monitor: lactate on VBG >2 - ensuring clearance with fluid administration, BP monitoring (invasive/non invasive)
	Manage: early aggressive fluids, early antibiotics reasonable to mention if justifies e.g. for surgical cause for D&V or biliary
Adrenal crisis	Monitor: refractory hypotension despite fluids and pressors.
	Manage: hydrocortisone- reasonable dose 50mg TDS/QID

Question 11 (18 marks)

A 27 year old female presents to ED with a fever and headache. She has just returned from Kenya after a 2 week holiday.

Her vital signs are:

HR 110 bpm
Sats 96 % on air
BP 100/60 mmHg
Temp 38.6 °C

Part a (12 marks)

List four (4) differential diagnoses and for each diagnosis please list two (2) supporting features on history or examination.

Model answer

Malaria	• Cyclical fevers • Travel to endemic area, no prophylaxis taken • Hepatomegaly, splenomegaly • Joint pains, malaise
Dengue	• Fever associated with headache • Rash follows fever- diffuse, skin flushing • Second rash can form- morbilliform. • Features on hx- endemic area, no mosquito prophylaxis/skin barrier
Typhoid	• Rash- rose spots, raised macules on chest and abdomen Constipation followed by diarrhoea • Splenomegaly and hepatomegaly • Relative bradycardia
Measles	• Florid maculopapular rash on day 3-4 • Associated coryzal symptoms • Rash pattern- head then spreads distally
Chikungunya	• Debilitating joint pain • Abrupt onset fever
Any other reasonable infection- eg. URTI, UTI, Scarlet fever	

Part b (1 mark)

A VBG and FBE is performed and is shown below:

pH	7.28
CO ₂	30
HCO ₃	18
Lactate	4.0
BSL	10
pO ₂	50
Hb	70
MCV	80
Plt	150
WCC	18.5

What is the most likely diagnosis?

Model answer

- VBG shows lactic acidosis
- Suggestive of malaria (falciparum)

Part c (5 marks)

State your five (5) immediate steps in the management of this patient.

Model answer

- Aggressive fluid replacement: N/saline 1L stat and repeat aiming to keep sys >100mmHg, lactate less than two
- Specific Treatment: Artesunate 2.4mg/kg IV on admission (liase with ID- confirm geographical resistance)
- Airway/Breathing: supportive, oxygen, NIV if developing APO
- Monitor for complications: renal failure, APO, seizures, black water fever
- Disposition: admission under ID, will need ICU as likely to deteriorate

Question 12 (12 marks)

You are a consultant working in a rural ED. A 33 year old woman of Chinese background who speaks mandarin is brought into ED by her husband with a sore left ear.

Her husband is translating for her and reports she was hit in the head when a saucepan fell from a cupboard.

A picture of her ear is shown below:



Part a (1 mark)

State the major abnormality on the provided image.

Model answer

Auricular Haematoma/perichondral haematoma

Part b (4 marks)

State four (4) steps in the management of this condition in the emergency department.

Model answer

- Auricular block
- Incision & drainage over haematoma
- Compression bandage 24 hrs (or button suture)
- Oral antibiotics

Part c (3 marks)

List three (3) potential complications of this condition.

Model answer

- Re-accumulation of blood/haematoma
- Infection e/g chondritis
- Cosmetic deformity/scar formation

Part d (4 marks)

List four (4) potential health advocacy issues in this particular case.

Model answer

- Suspicious injury not consistent with mechanism, concern for family violence
- May have children at home - need to ensure DHS notification if abuse happening in presence of children 3. Non English speaking background- needs translator to take thorough history and examination, consent for procedure
- Rural - follow-up/isolation
- Cultural/health literacy

Question 13 (12 marks)

A 55 year old male farmer presents to your regional emergency department with a 1 week history of worsening suicidal ideation in the setting of a recent relationship breakdown. He denies any attempt today.

Part a (7 marks)

Excluding age and gender, what other historical features would increase **this patient's** risk of suicide?

Model answer

- Depression or hopelessness
- Previous attempts
- Alcohol or drug use
- Rational thinking loss
- Separated/divorces or widowed or single
- Organised or serious attempt
- No social supports
- Stated future attempt
- Access to firearms or other lethal means (eg pesticide)
- Geographical isolation

Part b (3 marks)

He has been seen by your registrar and wants to self-discharge from the department despite attempts at de-escalation by your registrar. What is your approach to de-escalation in this patient?

Model answer

- Re attempt Verbal deescalation – explore reasons for wanting to leave (must attempt this) - Recruit help – family members or friends
- Offer medication, food ect
- Code grey / restraint
- Other reasonable answers

Part c (2 marks)

You decide that he is unsafe to leave but he remains adamant on self-discharging. He does not appear intoxicated. What are the criteria required to place him on a Mental Health Assessment Order?

Model answer

- Appears to have a mental illness
- Because of the mental illness the person appears to need immediate treatment to prevent
 - Serious deterioration in the patients mental or physical health
 - Serious harm to the person or another person
- If the person is made subject to an assessment order the person can be assessed d. There are no less restrictive means reasonable available to enable the person to be assessed

Question 14 (12 marks)

An 82 year old man is brought in by ambulance following a fall from standing height. He was unable to get up by himself.

He has a history of Parkinson's Disease and mild dementia. He is not taking any blood thinning medication.

He currently lives at home with his wife and son who provide all care for him.

On arrival, his vital signs are:

RR	18 /min
SaO ₂	97% on room air
HR	80 bpm
BP	130/70 mmHg
GCS	14/15 (usual for patient)

Part a (2 marks)

With regard to falls as a mechanism for trauma, state two (2) points of difference between low falls in the elderly vs low falls in the non elderly.

Model answer

- Leading cause of trauma in older patients compared with eg. vehicular cause in younger patients
- Older patients more likely to require hospitalisation, have longer stay and require discharge to a rehab facility
- Low mechanism can still lead to major traumatic mechanism
- Increased risk of falls increasingly related to cognitive impairment, polypharmacy, co-morbidities, sensory impairment
- Cause of fall must be considered eg syncope, compared with higher likelihood of mechanical falls in younger patients

Part b (5 marks)

For each body system listed below, state an anatomical or physiological effect of ageing and how this may impact the patient following trauma.

Model answer

Head and neck	• Decreased brain mass leads to stretching of bridging veins making them more susceptible to tearing and bleeding • Higher risk of significant ICH particularly SDH due to minor head trauma, related to increased risk of bleeding from use of anticoagulants. Lower threshold for CT scanning • Injuries to c-spine more common even with minimal mechanism and more likely to be in the upper c-spine • Central cord syndrome more likely post hyperextension injury • Higher risk of airway challenges and aspiration secondary to diminished swallowing reflexes, loose teeth, poor neck movement
Cardiac	• Pre-existing cardiac disease leads to decreased reserve and may blunt the expected physiological response to haemorrhage or pain • Maximum heart rates and ability to compensate for hypotension may be decreased due to age and medications

	• May have baseline hypertension which can lead to clinicians being falsely reassured by values within the “normal range”
Pulmonary	• Increasing chest wall rigidity and presence of kyphosis may lead to decreased respiratory reserve • Underlying conditions such as COAD may impair lung function which can lead to more significant hypoxia with physiological stress • Less sensitive to metabolic drivers of respiration eg acidosis, hypercapnia, hypoxia
Abdomen	• Pre existing renal impairment can worsen the risk of contrast induced nephropathy if undergoing imaging • Urinary or bowel injuries can evolve insidiously • Underlying liver disease can lead to higher risk of bleeding, ischaemia, post trauma complications • Decreased/weaker abdominal wall musculature therefore internal organs less protected and more prone to injury.
Musculoskeletal	• Weaker bones and general deconditioning make older person more susceptible to fracture even with minor trauma • Muscle atrophy can predispose patient to worsening mobility and balance issues

Part c (3 marks)

List three (3) important non-blood investigations you would do in this patient, with a justification for each.

Model answer

- ECG – may provide a clue as to cause for fall eg arrhythmia, heart block, ischaemia
- FWT/Urinalysis – assess for macroscopic haematuria which may suggest renal injury. May also show evidence of infection which may have led to delirium which can precipitate fall.
- Trauma series xrays (c-spine, CXR, pelvis) – screening tool to assess for any major bony injuries. May be helpful if patient is not for intervention or resus but to help prognosticate
- Trauma pan scan – low threshold to do CT full body given unreliable history and potential for serious injury despite low velocity mechanism

Part d (2 marks)

Define frailty and state one way in which this impacts an older person who has had a fall.

Model answer

Frailty = clinically recognisable state of vulnerability due to age associated decline in reserve and function of multiple physiologic systems

Impact:

- Frailty leads to decreased mobility and deconditioning, therefore increasing the risk of falls
- Frail patients have worse outcomes related to trauma
- Prolonged immobilisation will have more of an impact on the older, frail person, therefore need active strategies to prevent deconditioning and pressure injuries
- Consider using a frailty assessment tool when assessing elderly patients to assist in ongoing management

References:

- Article – Trauma in the elderly patient <https://pmc.ncbi.nlm.nih.gov/articles/PMC6221775/>

- Article - Major trauma in the older patient: Evolving trauma care beyond management of bumps and bruises [https://acem.org.au/getmedia/78c75ea8-711b-45cc-84ac-a6d6e6e2dc7f/Carpenter et al-2017-Emergency Medicine Australasia.aspx](https://acem.org.au/getmedia/78c75ea8-711b-45cc-84ac-a6d6e6e2dc7f/Carpenter_et_al-2017-Emergency_Medicine_Australasia.aspx)
- Website – Trauma Victoria <https://trauma.reach.vic.gov.au/specialist/older-person-trauma/key-messages/>

Question 15 (12 marks)

A 30-year-old female, G1P0 presents to the ED. She is 36 weeks pregnant; and is complaining of a headache and right upper quadrant pain. She appears jaundiced.

Her vital signs are as follows:

HR	95 bpm
BP	185/130 mmHg
RR	24 /min
SpO ₂	95 % RA
Temp	37.5 °C

Part a (4 marks)

State four (4) features on your clinical examination that would suggest that she has severe pre-eclampsia.

Model answer

- Hyper-reflexia
- Clonus
- Altered conscious state (or confusion)
- Focal neurological deficit
- Crackles on lung auscultation to suggest pulmonary oedema
- Marked pitting oedema

Part b (4 marks)

Her blood tests show the following:

		Reference range
Hb	100	130 – 175 g/L
WBC	8	4 – 12.5 x10 ⁹ /L
Platelets	90	150 – 400 x10 ⁹ /L

Liver Function Test

Bilirubin	80	< 21 mcmol/L
ALT	150	< 40 units/L
GGT	100	< 62 units/L
ALP	150	< 110 units/L

Apart from HELLP Syndrome and pre-eclampsia, state four (4) other differentials for this clinical scenario.

Model answer

- TTP/HUS
- Acute Fatty Liver of Pregnancy
- Acute hepatitis
- Biliary disease ◇ biliary colic/cholecystitis/cholangitis
- Cholestasis of pregnancy
- Catastrophic anti-phospholipid syndrome.

Part c (1 marks)

A labetalol infusion has been commenced. The patient's blood pressure is now 170/120.

State an appropriate blood pressure target for this patient.

Model answer

<160/110mmHg (based on RWH guidelines). Several guidelines state less than 150/100 ◇
happy to accept this as well.

Part d (3 marks)

Apart from labetalol, list three (3) other intravenous medications that can be used to manage this patient's blood pressure. Include appropriate doses in your answer.

Model answer

- Magnesium Sulphate 4g IV bolus
- Hydralazine 2.5 to 10mg IV bolus, followed by infusion
- Nifedipine IV 100-200mg IV over 2 minutes
- GTN IV 0.1 to 0.8mcg/kg/min (suggested as second line in Oh's Intensive Care Manual; Ninth Edition)
- SNP IV 1-4 mcg/kg/min (suggested as second line in Oh's Intensive Care Manual; Ninth Edition)

Dosages obtained from LITFL - <https://litfl.com/pre-eclampsia-and-eclampsia/>

References:

1. Textbook of Adult Emergency Medicine, Fifth Edition
2. Oh's Intensive Care Manual, Ninth Edition
3. Royal Women's Hospital – Hypertensive Disorders in Pregnancy
(<https://app.prompt.org.au/download/191949?code=6623b682-d891-4f7f-a2d3-a384a8e42a29>)
4. <https://litfl.com/pre-eclampsia-and-eclampsia/>

Question 16 (18 marks)

A 3-year-old boy is brought to the Emergency Department by ambulance approximately 2 hours after his grandmother found him playing with her medication bottles. She takes multiple medications and is unsure exactly what he may have ingested. The child is drowsy but rousable.

On examination:

HR	55 bpm
BP	85/50 mmHg
RR	16 /min
Temp	36.2 °C
GCS	13 (E3, V4, M6)
Pupils	3 mm, equal and reactive
Blood glucose	3.2 mmol/L

Part a (4 marks)

List four (4) classes of medications that could cause this clinical presentation.

Model answer

Key features to recognize: Bradycardia, hypotension, drowsiness, hypothermia, hypoglycaemia

Model Answer (1 mark each):

- Beta-blockers
- Calcium channel blockers
- Clonidine/alpha-2 agonists
- Digoxin/cardiac glycosides

Also Accept:

- Opioids (though less likely to cause significant bradycardia)
- Organophosphates
- Cholinergic agents

Marking Notes:

- 1 mark for each appropriate drug class (maximum 4 marks)

Part b (6 marks)

State your immediate management priorities for this child in the first 15 minutes.

Model answer

Resuscitation Priorities (3 marks):

- Airway assessment and positioning; consider airway adjuncts if needed (1 mark)
- High-flow oxygen, continuous monitoring (SpO₂, ECG, BP) (0.5 marks)
- IV access and fluid resuscitation for hypotension (0.5 marks)
- Treat bradycardia if haemodynamically unstable (atropine consideration) (1 mark)

Specific Interventions (3 marks):

- Treat hypoglycaemia urgently with IV dextrose (2 mL/kg 10% dextrose) (1 mark)
- Focused history from grandmother - medication list, quantities, timing (1 mark)
- Contact Poisons Information Centre (13 11 26 in Australia/NZ) (1 mark)

Marking Notes:

- Must address hypoglycaemia to get full marks
- Deduct marks if critical steps omitted (airway, hypoglycaemia treatment)
- Award partial marks for incomplete but reasonable responses

Part c (4 marks)

What specific antidote therapy may be indicated and when would you administer it?

Model answer

If Beta-blocker or Calcium Channel Blocker Toxicity (2 marks):

- High-dose insulin euglycaemic therapy (HIET) - 1 unit/kg bolus, then 1-10 units/kg/hr infusion
- Indications: haemodynamic instability despite fluid resuscitation, significant bradycardia/hypotension

Supportive Measures (2 marks):

- Glucagon (for beta-blocker toxicity) - 50-150 mcg/kg IV bolus
- IV calcium (calcium chloride 10% 0.2 mL/kg or calcium gluconate 10% 0.6 mL/kg) for CCB toxicity
- Atropine for symptomatic bradycardia (20 mcg/kg, may repeat)
- Consider intralipid emulsion therapy in severe refractory cases

When to Administer:

- Early in symptomatic patients with cardiovascular instability
- Before progression to cardiac arrest

Marking notes:

- Must mention HIET or glucagon/calcium for full marks
- 1 mark for identifying appropriate antidote
- 1 mark for dosing or mechanism
- Award marks for discussing timing/indications

Part d (4 marks)

List four (4) investigations you would order and justify each.

Model answer

- ECG - Identify conduction abnormalities, QRS/QT prolongation, assess for digoxin toxicity, monitor bradycardia
- Blood glucose (formal laboratory) - Confirm bedside testing, monitor response to treatment, guide ongoing dextrose therapy
- Paracetamol and salicylate levels - Screen for common co-ingestions, therapeutic window considerations, asymptomatic in early phases
- Electrolytes, renal function (EUC) - Assess for hyperkalaemia (digoxin), monitor renal function, guide fluid therapy

Also Accept:

- Blood gas - assess acid-base status, lactate (tissue perfusion)
- Digoxin level (if suspected)
- Troponin (myocardial injury in severe toxicity)
- Full blood count

Marking Notes:

- Must provide justification for each investigation
- Paracetamol level essential in any paediatric overdose
- 0.5 marks for investigation, 0.5 marks for appropriate justification

Question 17 (12 marks)

A 32-year-old G3P2 woman presents to your rural Emergency Department by ambulance at 38+5 weeks gestation with severe abdominal pain. On arrival she delivers a live infant precipitously in the resuscitation bay.

Part a (4 marks)

State four (4) steps you would perform in the active management of the 3rd stage of labour.

Model answer

- Administration of a uterotonic (within 1 minute of birth)
 - Give Oxytocin 10 IU IM (preferred) or IV
 - This stimulates uterine contraction and reduces risk of postpartum haemorrhage
- Delayed cord clamping (usually 1-3 minutes)
 - Unless neonatal resuscitation is required
 - Improves neonatal iron stores and blood volume
- Controlled cord traction (CCT)
 - Apply gentle traction on the umbilical cord while providing counter pressure on the uterus (suprapubic support)
 - Deliver the placenta once separation signs appear
- Delivery of the placenta
 - Allow placenta to deliver with traction and maternal effort
 - Rotate placenta slowly to deliver membranes intact
- Uterine massage after placental delivery
 - Palpate fundus to ensure it is firm and contracted
 - Massage if boggy
- Inspection of placenta and membranes
 - Confirm completeness (no missing cotyledons)
 - Inspect membranes and cord
- Assess for bleeding and uterine tone
 - Monitor maternal vitals and vaginal bleeding
 - Continue uterine tone checks

Part b (6 marks)

List three (3) drugs, including doses, that may be used for management of postpartum haemorrhage in this patient.

Model answer

	Drug	Dosage	Route/s of administration
1st line - immediate management	Oxytocin (Syntocinon)	10 iu	IM or IV
	Syntometrine	1 ml (5 iu / 0.5mg)	IM
	Ergometrine	500 microg or 250 microg + 250 microg	IM IM + IV (give IV slowly)
2nd line	Tranexamic acid	1 g in 100ml 0.9% NaCl	IV (given over 10 mins)

2nd line	CarboPROST	250 microg/1 mL	IM
After immediate management - once bleeding is controlled, use to maintain tone	Misoprostol	400-800 microg	Buccal or PR
	Oxytocin infusion	40 iu in 1L CSL	IV (given over 4 hours)

Part c (2 marks)

It is now > 30 minutes without delivery of the placenta and there is ongoing extensive post partum haemorrhage.

State two (2) IMPORTANT non-pharmacological interventions in the management of primary postpartum haemorrhage.

Model answer

Tone	• Massage the atonic uterus to stimulate contraction and expel clots. • Administer oxytocics • Insert an indwelling catheter (IDC) • If heavy bleeding continues, apply bimanual compression until further management decisions are made • Bakri balloon in ED In the event of intractable bleeding, surgical intervention in theatre may be required, for example, examination under anaesthetic, insertion of a uterine balloon (Bakri), B-Lynch suture, uterine artery ligation, hysterectomy
Trauma	• In the presence of visible trauma, apply pressure and repair either in ED or under anaesthesia in theatre • Vaginal or uterine packing may be required to control bleeding • When packing the uterus: - tie 3-4 gauze rolls together, lightly soak gauze in sodium chloride 0.9 per cent and tightly pack the uterus and vagina to ensure an effective tamponade - document the number of packs present and a plan for their removal • If the placenta is delivered and the uterus contracted, consider other concealed causes of trauma such as ruptured uterus, broad ligament haematoma
Tissue	• If the placenta is not delivered and bleeding continues, prepare for examination and manual removal under anaesthesia in theatre • If the placenta is delivered, check the placenta and membranes for completeness • Where tissue is retained, or bleeding continues, prepare for examination under anaesthesia in theatre

	• Alternatively, apply vigorous bimanual compression until further help is available
Thrombin	• In the presence of a well contracted uterus and where trauma and retained tissue have been excluded, consider investigating for coagulopathy • MTP

Question 18 (18 marks)

You are an Emergency Consultant on call for an inner city ED overnight. Your junior registrar calls and ask for assistance with management of an acute severe asthma attack. The patient is a 41 year old male who weighs 100kg.

Part a (4 marks)

Other than oxygen, list four (4) pharmacological asthma treatment options including route and dose that you wish to confirm have already been administered.

Model answer

- **salbutamol** 100 micrograms per actuation, 12 actuations (1 at a time) via pMDI with spacer; repeat every 20 minutes for the first hour (or sooner if needed)
OR
salbutamol 5 mg via intermittent nebulisation every 20 minutes for the first hour (or sooner if needed)
- **ipratropium** 21 micrograms per actuation, 8 actuations (1 at a time) via pMDI with spacer; repeat every 20 minutes for the first hour (or sooner if needed).
OR
ipratropium 500 micrograms via intermittent nebulisation every 20 minutes for the first hour (or sooner if needed).
- **Steroids**
prednisolone (or prednisone) 37.5 to 50 mg orally, within 1 hour of presentation
OR
dexamethasone 16 mg orally, within 1 hour of presentation
OR
hydrocortisone 100 mg intravenously
- **magnesium** sulfate 10 mmol diluted to 100 mL in a compatible fluid, by slow intravenous injection over 20 minutes.

Part b (2 marks)

The above treatments have been initiated and the patient hasn't improved. List two (2) further pharmacological asthma treatment options that can be considered, including route and dose.

Model answer

- **Salbutamol IV.** Sensible ranges acceptable. Bolus 250mcg neat over 1 min. Infusion 5-20mcg/ min.
- **Adrenaline IV.** Sensible ranges acceptable. Bolus (10 µg) every 1–2 min. Infusion ~5-10mcg/min initially. Accept adrenaline 0.5mg IM, even though this is for anaphylaxis.
- **Ketamine IV.** Sensible ranges acceptable. Bolus: 0.25–0.5 mg/kg IV. Infusion: 0.5–2 mg/kg/hour.
- **Heliox INH.** 80% Helium/20% Oxygen (80/20) and 70% Helium/30% Oxygen (70/30)

Part c (2 marks)

List two (2) non-pharmacological treatment options for acute severe asthma.

Model answer

- NIV
- Intubation
- ECMO (VV)

Part d (4 marks)

The patient becomes hypoxic and his work of breathing increases. List four (4) differential diagnoses for asthma and one characteristic feature on assessment of each.

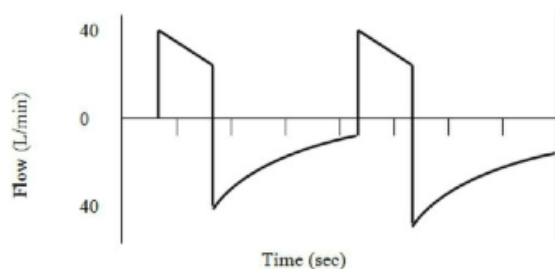
Model answer

Anaphylaxis*	Rash, stridor.
Pneumothorax	Absence of lung sliding on ultrasound, reduced air entry on auscultation, evidence of traumatic chest injury suggestive of rib fracture
Pneumonia	Fever, crackles on auscultation
APO/cardiac failure	Pitting oedema to legs, raised JVP, cardiomegaly on ultrasound
Upper airway pathology (obstructing foreign body/ airway swelling/epiglottitis/vocal cord dysfunction).	Stridor, hx of foreign body obstruction, fever. Anything sensible.

Part e (1 mark)

After examination, you feel certain this is severe, refractory asthma and the patient is intubated.

What abnormality is demonstrated by this flow-time respiratory waveform?

**Model answer**

Gas trapping/incomplete exhalation

Part f (1 mark)

Name one (1) ventilator setting change that will help normalise this waveform.

Model answer

- Decrease I:E time
- Decrease RR

Part g (4 marks)

After your ventilator adjustment, the flow-time respiratory waveform returns to normal.

The patient then becomes hypoxic again despite FiO₂ 1.0.

List four (4) potential causes for their hypoxia.

Model answer

- Displacement of the endotracheal tube (ETT)
- Obstruction of the ETT, eg sputum/kinking
- Patient — especially pneumothorax; also: pulmonary embolism, pulmonary oedema
- Equipment — ventilator problems
- Anaphylaxis to induction agent
- Ventilator dysynchrony

References

- Australian Therapeutic Guidelines.
- <https://aci.health.nsw.gov.au/networks/eci/clinical/tools/respiratory/asthma/the-crashing-patient-life-threatening-asthma>
- https://cpg.stjohn.org.nz/assets/pdf/guidelines/Exacerbation%20of%20Asthma%20-%20EAS.pdf?utm_source=chatgpt.com
- <https://derangedphysiology.com/main/cicm-fellowship-exam/past-papers/2008-paper-2-sags/question-261#answer-anchor>
- <https://litfl.com/post-intubation-hypoxia>

Question 19 (12 marks)

A 25 year old man is brought to your urban district Emergency Department having been assaulted. He sustained multiple punches to the face around his left eye and his upper chest.

Part a (3 marks)

List three (3) examination findings that would indicate the need to perform orbital decompression in this patient.

Model answer

- Unconscious:
 - Afferent pupillary defect (Marcus Gunn Pupil)
- Awake:
 - Proptosis
 - V/A < 6/18 or 6/24
- Both:
 - IOP > 40 mmHG

Part b (5 marks)

You decide to perform a lateral canthotomy.

State five (5) steps that you would take in performing a lateral canthotomy.

Model answer

- Local anaesthetic lignocaine + adrenaline anaesthetic, Straight artery clip, straight iris scissors, tooth forceps
- Inject 1-2mls local into lateral canthus, clean with saline (no alcohol), drapes
- Straight artery clip on lateral orbital margin and clamp for landmark of where to cut to devascularise
- Use scissors to cut to orbital rim
- Perform cantholysis along the orbital rim towards the nose.
- Check lower lid is lax and evertible and recheck pressure or V/A
- Urgent ophthalmic review
- 60-90 mins is critical ischaemia time for the retina and optic nerve
- Documentation

Part c (4 marks)

List four (4) findings on assessment that increase the risk of blunt cerebrovascular injury (BCVI) in any patient.

Model answer

- C1 – C3 Cervical spine fracture, subluxation or ligamentous injury
- Fracture through foramen transversarium
- Mandibular Le Fort II & III fractures
- Base of skull fracture involving carotid canal
- Acute infarction on CT brain
- Closed head injury with diffuse axonal injury
- Severe chest injuries
- Sternal or 1st / 2nd rib fractures

Question 20 (12 marks)

A 42-year-old man presents to the Emergency Department after a fall onto his outstretched hand. He complains of elbow pain with localised tenderness on examination and vague wrist discomfort, without focal bony tenderness at the wrist.

Plain radiographs of the elbow and wrist are obtained and are shown below.



Part a (3 marks)

State three (3) diagnostic abnormalities on above X-Rays.

Model answer

- Radial head fracture (displaced or comminuted)
- Widening or subluxation of the distal radioulnar joint
- Positive ulnar variance / proximal radial migration



The ulna appears longer than usual because the radius has moved towards the elbow.

Part b (1 marks)

State the injury pattern most consistent with this presentation and X-ray findings.

Model answer

Essex-Lopresti injury

Part c (3 marks)

List the anatomical structures involved.

Model answer

- Radial head fracture
- Interosseous membrane rupture
- DRUJ disruption

Part d (2 marks)

A cohort study comparing **early versus delayed diagnosis** of this injury reports the following outcomes at 12 months:

- Chronic wrist pain occurred in **14%** of patients with early diagnosis
- Chronic wrist pain occurred in **35%** of patients with delayed diagnosis

Using the data provided:

Calculate the absolute risk reduction (ARR) showing your formula.

Model answer**ARR formula:**

$ARR = \text{Risk}(\text{control}) - \text{Risk}(\text{treatment})$

$ARR = 0.35 - 0.14 = \mathbf{0.21 (21\%)}$

Part e (3 marks)

Calculate the number needed to treat (NNT) showing your formula and State your interpretation of these results for clinical practice.

Model answer**NNT formula:**

$NNT = 1 / ARR$

$NNT = 1 / 0.21 \approx \mathbf{4.8 \rightarrow 5}$

Early diagnosis prevents one case of chronic wrist pain for approximately every five patients diagnosed early, representing a clinically meaningful benefit and highlighting the importance of early recognition of this injury pattern

Question 21 (12 marks)

You are the FACEM in charge of a mixed regional Emergency Department. A thunderstorm asthma risk warning has been issued for your region.

Part a (2 marks)

State the pathogenesis of thunderstorm asthma.

Model answer

- **High atmospheric pollen counts present** (rye grass especially)
- Pollen is drawn into storm clouds. **As rain droplets fall, they break pollen into superfine particles**, falling back to ground level
- **Superfine particles as deposited in small airways** triggering severe asthma symptoms
- Asthmatics and allergic rhinitis suffers most at risk but can affect non atopic individuals

Bold to pass

Part b (10 marks)

Two hours following the alert, you are receiving multiple ambulance pre-notifications for patients with acute respiratory distress as well as a rapid rise in walk-ins with acute wheeze and breathlessness.

State ten (10) steps you would take to prepare and manage the ED response over the next 6 hours.

Model answer

- **Active Code Brown (or Thunderstorm Asthma Code Brown if hospital has policy)**
- **Establish incident controller (EPIC until Director arrives)**
- **Notify hospital exec, bed manager, after hours NUM, ICU**
- **Allocate an ambulance liaison officer/staging area**
- Establish streamed respiratory flow areas including resuscitation, monitored acute space, and fast-track wheeze area
- Utilise outpatient clinic areas as acute respiratory clinics/ surge areas
- Allocate staffing accordingly to manage front of house, Resus, resp clinic, patients arriving separate to the code brown event
- **Deploy premade asthma wheezing packs with Ventolin MDI, disposable spacer and prefilled clinical orders (e.g burst therapy and steroids) /Have pharmacy make packs**
- Reserve oxygen based nebulisers and resp support systems for severe cases only
- Staff call backs if required
- **Admitted patients transferred to ward to free up staff and clinical area, utilise discharge lounge**
- Discharge FT patients without treatment with plan to decant to urgent care or safety net to return when able
- Pre-printed discharge packs with clear plans and steroids prepacks
- Asthma review clinic in OP the following day with list of call back patients

Bold to pass + any of the above

Question 22 (12 marks)

A 3-day-old term neonate presents to the emergency department with poor feeding, tachypnoea, and lethargy. Pregnancy and delivery were uncomplicated. On examination, the infant is mottled, HR 190 bpm, RR 70 /min, BP 55/30 mmHg, SpO₂ 92 % in air. Femoral pulses are weak. There is hepatomegaly. No murmur is audible.

Part a (1 mark)

What is the most likely diagnosis?

Model answer

- Duct-dependent congenital heart disease, most likely critical coarctation of the aorta or hypoplastic left heart syndrome
- Half a mark if only mentions congenital heart disease

Part b (3 marks)

List three (3) key clinical or bedside features that help distinguish this condition from neonatal sepsis.

Model answer

- Weak or absent femoral pulses with relatively preserved upper limb pulses
- Differential blood pressure between upper and lower limbs
- Minimal or no fever (often normothermic)
- Poor response to fluid boluses
- Hepatomegaly due to heart failure
- Relatively preserved oxygen saturations despite severe shock

Part c (3 marks)

Outline your immediate ED management priorities in the first 10 minutes.

Model answer

- ABC resuscitation with cautious oxygen (avoid hyperoxia)
- Immediate commencement of prostaglandin E₁ (alprostadil) infusion
- Early airway consideration if worsening acidosis or respiratory failure
- Check glucose
- Check lactate
- Bed side echo if possible and credentialled
- Careful fluid bolus (5–10 mL/kg) only if hypotensive, avoiding overload

Part d (2 marks)

You have decided to intubate the patient. Complete the followings:

Model answer

3.5 mm uncuffed

(Accept 3.0–3.5 mm depending on gestational size)

~9–10 cm at the lip

(Rule of thumb: weight (kg) + 6 or “3 × tube size

Part e (3 marks)

Your hospital does not have a neonatal ICU and a decision is made to transfer the patient to a tertiary paediatric centre. Outline three (3) actions required to ensure safe inter-hospital transfer of this neonate.

Model answer

- Stabilisation prior to transfer
 - Airway secured if apnoea, worsening acidosis, or on prostaglandin infusion
 - Haemodynamic optimisation: prostaglandin infusion running, inotropes if required
 - Adequate IV access, glucose correction, temperature control
 - Ensure the patient is as stable as possible before departure
- Transfer logistics and communication
 - Early activation of paediatric / neonatal retrieval service
 - Clear handover including working diagnosis, current status, and therapies
 - Ensure appropriate escort team (neonatal-trained staff)
 - Prepare for deterioration en route (airway, drugs, backup plans)
- Other
 - Clear documentation
 - Family support

Question 23 (12 marks)

You are caring for a 66 year old woman who has septic shock due to community acquired pneumonia. She is morbidly obese. She has no other past medical problems and takes no regular medications. Her current vital signs are:

GCS	12 (E3, V3, M6)
HR	124 bpm
BP	85/55 mmHg
O ₂ sats	90 % on HFNP – FiO ₂ 80 %
Temp	38 °C
RR	24 /min

You decide she requires intubation due to Type I and II respiratory failure.

Part a (6 marks)

State six (6) strategies you would use to address the challenges of intubation in this patient, with rationale.

Model answer

1. Fluid resuscitation/optimize haemodynamics
 - NaCl 0.9% 1000mL bolus aim MAP>65mmHg
 - Noradrenaline infusion if not achieving MAPRationale: high risk of further hypotension with intubation
2. Pre-oxygenation with NIV – to increase FRC/overcome chest wall compliance with obesity/reduce work of breathing
3. Positioning
 - Sitting up for pre-oxygenation – to offload abdominal weight from diaphragm/to improve V/Q
 - Ramped (tragus to sternal notch) – to optimise view of cords as obesity can impair view
4. Drug dosing and choice – cardiostable/reduce dose
5. Ventilate during apnoea time with NIV or PEEP valve– as likely already degree of resp acidosis/avoid worsening acidosis/to continue deliver PEEP
6. Post-intubation ventilation strategy – high PEEP – overcome chest wall compliance
7. Equipment - Use video/bougie/2-hand bagging etc – to optimise view of cords in setting of obesity/because anticipate difficult ventilation
 - Short handle laryngoscope – to avoid large breast tissue
8. Palpate front of neck anatomy prior to intubation and have a double set up with FONA operative ready – large neck
9. Use multiple staff to move patient – increase weight risks injury to staff
10. Use US for cannula insertion
11. Large BP cuff or invasive/art line – for accurate measurement, or invasive BP

Did not accept:

- Call anaesthetics or best/most senior operator – you are expected to be able to intubate this patient in “exam land”
- Pre-oxygenate with non-rebreather – she’s already on HFNP!

Part b (3 marks)

Following intubation her BP drops to 70/45 mmHg.

Apart from septic shock, list three (3) important causes of post-intubation hypotension and how you would manage them if confirmed.

Model answer

- Anaphylaxis – adrenaline IM 500mcg
- Tension pneumothorax – finger thoracostomy
- Gas trapping – disconnect ventilator

Part c (1 mark)

How would you calculate her ideal body weight?

Model answer

Height - 105

(Ref: Dunn)

Part d (2 marks)

List your intubating induction and paralytic drugs and for each whether your dose will be based on ideal or actual body weight.

Model answer

- Ketamine – IBW
- Rocuronium - IBW

Total body weight	Ideal body weight
Propofol (maintenance)	Propofol (induction)
Etomidate	Ketamine (+20% of ideal body weight)
Thiopentone (maintenance)	Thiopentone (induction)
Suxamethonium	Rocuronium
Atracurium	Vecuronium
Fentanyl (maintenance)	Fentanyl (induction)

REF: Dunn

Question 24 (12 marks)

A 42-year-old woman presents to the Emergency Department with vomiting, abdominal pain, and confusion for 24 hours. She has a history of primary adrenal insufficiency and reports poor oral intake and missed doses of her regular hydrocortisone during a recent viral illness.

On examination:

BP	82/46 mmHg
HR	118 bpm
RR	22 /min
Temp	37.8°C
SpO ₂	98% RA

She appears dehydrated, drowsy, and has generalised abdominal tenderness without peritonism. Initial bedside glucose is 2.8 mmol/L.

Part a (4 marks)

List four (4) important differential diagnoses to consider in this patient.

Model answer

- **Addisonian crisis** (primary adrenal insufficiency)
- Septic shock
- Gastroenteritis with hypovolaemia
- Diabetic ketoacidosis
- Acute abdominal pathology (e.g. pancreatitis, appendicitis, bowel obstruction)
- Hypoglycaemia from other causes (e.g. insulin, sulfonylureas)

Part b (4 marks)

List four (4) key investigations you would perform to support the diagnosis, with rationale.

Model answer

- Urea, electrolytes and creatinine: Identify hyponatraemia, hyperkalaemia, and acute kidney injury typical of adrenal crisis
- Serum cortisol (pre-steroid if possible): Support diagnosis of adrenal insufficiency
- FBC/CRP: Elevated inflammatory markers would suggest infection as a precipitating cause
- Blood cultures: Identify occult sepsis with offending pathogen and guide antibiotic management
- Venous/arterial blood gas: Assess for metabolic acidosis/and lactate in shock
- ECG: assess for changes of hyperkalaemia

Part c (4 marks)

State your immediate management of this patient, with end-points if applicable.

Model answer

- Immediate IV hydrocortisone 100 mg IV bolus (then 50–100 mg IV every 6 hours or infusion aiming for haemodynamic stability (SBP >90))
- Aggressive IV fluid resuscitation (0.9% sodium chloride)
- 1-2L 0.9% NaCL, aim MAP $\geq$ 65 mmHg
- Correction of hypoglycaemia: IV 10% dextrose bolus $\pm$ infusion aiming BSL $\geq$ 4.0 mmol/L
- Treat precipitating cause (e.g. infection): Early broad-spectrum antibiotics if sepsis suspected e.g. Stat dose 4.5g Piperacillin-Tazobactam IV
- Electrolyte correction: May require IV calcium gluconate, Insulin/dextrose +/-
- Salbutamol (with appropriate dosing/route) for management of hyperkalaemia if not normalising post steroids and fluids.

Question 25 (12 marks)

You decide to run an education session for your ED consultant colleagues with the theme of vaccine-preventable infectious diseases.

Part a (8 marks)

For each of the following vaccine-preventable illnesses, list the approximate incubation period and one (1) serious complication (excluding death).

Model answer

ILLNESS	APPROXIMATE INCUBATION PERIOD	POTENTIAL SERIOUS COMPLICATION (excluding death)
Measles	7-14 days	Pneumonia/pneumonitis, encephalitis, SSPE, permanent brain damage.
Pertussis	7-10 days (up to 21 days)	Pneumonia, seizures, hypoxic encephalopathy, permanent brain damage.
Chickenpox	10-21 days	Pneumonia, Necrotising fasciitis, sepsis, encephalitis, acute cerebellar ataxia, aseptic meningitis, transverse myelitis, thrombocytopenia, congenital malformations.
Hepatitis B	60-90 days	Hepatitis, acute hepatic necrosis, cirrhosis, liver cancer.

Part b (2 marks)

State one (1) differentiating feature for the pattern of rash between measles and early chicken pox. Do not include the type of rash.

Model answer

Measles rash pattern:

- Cephalocaudal pattern (starts from the head/face)
- All lesions occurring at the same stage

Early chicken pox rash pattern:

- Centripetal pattern (starts from the trunk)
- Lesions occur in different stages/crops

Part c (2 marks)

What isolation precautions are required in ED for a patient suspected of having measles versus chicken pox?

Model answer

- Measles isolation precautions in ED: airborne precautions
- Chicken pox isolation precautions in ED: airborne + contact precautions

References:

- Australian Immunisation Handbook
- Australian Government Institute of Health and Welfare Vaccine-preventable diseases in Australia: [Vaccine-preventable diseases in Australia, Fact sheets - Australian Institute of Health and Welfare](#)
- Victorian Government Department of Health Disease information and advice: [Disease information and advice](#)
- Queensland Health Vaccination of workers in healthcare settings - Guideline Version 2.2 – November 2025: [Further information on vaccine preventable diseases](#)