

Question 1 (12 marks)

An 18 month old male is brought into your emergency department following ingestion of vape juice 30 minutes prior to his arrival into ED. There are no clinical features of toxicity at the time of presentation.

The patient has no medical conditions.

a) State three (3) additional details you require to perform a risk assessment. (3 marks).

1. _____

2. _____

3. _____

- Volume of juice ingestion
- Concentration of liquid: E-cigarette liquid for immediate use in vaping contains 6 to 36 mg/mL of nicotine. Also available in concentrations of up to 200 mg/mL.
- Co-ingestion of other agents
- Weight
- Vomiting immediately after ingestion

Examiner Note: better candidates may mention this -5 mg/kg of nicotine is potentially fatal

- b) List three (3) clinical features from three (3) different systems that would suggest early toxicity from this ingestion. (3 marks).

1. _____

2. _____

3. _____

- GI: hypersalivation, nausea/vomiting, RCH (abdo pain)
- Cardiovascular: tachycardia, hypertension
- Neurological: muscle fasciculations (or increased myotonic activity), confusion, tremor, headache, ataxia (agitation, fasciculation, seizures). Altered Level of consciousness not accepted
- Respiratory: bronchorrhea (tachypnoea, increased work of breathing, shortness of breath, bronchorrhea, bronchoconstriction / wheeze)

- c) List two (2) clinical features from two (2) different systems that would suggest delayed toxicity from this ingestion. (2 marks).

1. _____

2. _____

- Cardiovascular: hypotension, bradycardia, arrhythmia, shock
- Respiratory: hypoventilation/apnoea, hypopnoea,
- Neurological: coma, seizure, lethargy, muscle paralysis

The patient remains asymptomatic for the necessary period of observation.

d) State four (4) conditions that must be satisfied for safe discharge of this patient. (4 marks)

1. _____

2. _____

3. _____

4. _____

- **Non-accidental injury/Neglect excluded** (*must be included for full marks*)
- Normal ECG
- Normal observations
- Parents/carers advised on safe storage of medications/chemicals
- Safe discharge destination and able to return
- Parent/carer understands criteria for return to ED
- Discharge during daylight hours

Question 2 (12 marks)

A 32 year old female presents to the emergency department (ED) after an alleged assault. You note that in the last two (2) months she has had multiple presentations with various injuries. You suspect intimate partner violence.

- a) List four (4) physical injury characteristics that would support your suspicion of intimate partner violence. (4 marks)

1. _____

2. _____

3. _____

4. _____

- Injuries hidden by clothing, heavy make up
- Injuries at various stages of healing
- Injuries during pregnancy
- Injuries central in pattern e.g. neck, throat, breasts, abdomen
- Bilateral injuries to the extremities
- Injuries characteristic of assault e.g. burns esp. cigarette, hair pulled out, 'Nightstick #s', ruptured tympanic membrane
- Evidence of strangulation such as linear bruising or abrasions to neck +/- hoarse voice +/- Subconjunctival/retinal haemorrhages / conjunctival petechiae.
- Sexual assault/ genital injuries including rectal injuries
- Stated mechanism not consistent with observed injuries

Examiner Notes:

- "Patterned" bruising or injury as a term gets ½ mark, more detail required for 1 mark
- Facial injuries does not receive a mark

- b) List five (5) risk factors on history which indicate an increased risk of lethality.
(5 marks)

1. _____
2. _____
3. _____
4. _____
5. _____

- **Access to, or use of weapons**
- **Previous strangulation** or choking, esp. with loss of consciousness
- **Threats to kill patient or children**
- **Physical assault while being pregnant / following new birth**
- **Planning to leave or recent separation**
- **Escalating severity or frequency of violence**
- **Stalking**
- **Controlling behaviours** (e.g. financial control, or attempts to isolate from family and friends)
- **Sexual violence**
- Threats to harm or kill pets/ actual harm to pets
- Victim belief that they will be killed
- Previous suicide attempts or threats
- Obsession/ jealousy
- Drug or alcohol abuse
- Unemployment or economic hardship
- Criminal record +/- violations of restraining orders

Examiner note: Must include at least three of the bold answers to get full marks

- c) State three (3) resources an ED needs to adequately manage cases of suspected intimate partner violence. (3 marks)

1. _____

2. _____

3. _____

- ED protocols and guidelines for assessment of suspected family violence / screening tools (e.g., HITS), training in screening, trauma informed care, privacy triage settings
- Safe discharge planning e.g., police / women's refuge.
- Referral pathways to multidisciplinary teams / patient support services e.g., social work, translators, indigenous health liaison officers / Kaitiaki
- Safe ED design inc. spaces for private conversations
- Provisions for support of staff welfare
- Appropriately trained security staff/ security staff to provide victim safety (security staff accepted)
- Other appropriate answers accepted

Question 3 (12 marks)

A 28 year old male involved in a high speed motor vehicle accident is brought in to your emergency department (ED) via ambulance. He is hypotensive, pale and diaphoretic. He has an isolated intra-abdominal injury. Packed red cell transfusion is initiated.

Tranexamic acid (TXA) was administered pre-hospital, and your junior doctor enquires regarding the evidence for its use.

- a) State the primary finding from the PATCH-Trauma study (Prehospital Tranexamic Acid for Severe Trauma). (1 mark)

- There was no significant difference in survival with a favourable functional outcome at 6 months.

Your site utilises thromboelastography to guide trauma resuscitation.

- b) List two (2) potential benefits of thromboelastography-guided product replacement over a fixed ratio blood transfusion. (2 marks)

1. _____
2. _____

- Decreased volume of blood products used (therefore decreased cost/wastage, reduced risk of the complications listed below)
- Improved patient outcomes including bleeding rate, length of stay and mortality

Examiner Note: Accept decreased volume of blood products as answer, but not separate answers for decreased use of packed cells, decreased use of plasma, platelets etc.
Improved patient outcomes need to be specified – i.e., improved mortality/survival, improved LOS, etc., but could be counted as separate answers

Two main answers (improved survival and reduced blood product usage) are referenced in both Tintinalli and Dunn, as well as multiple articles in the literature.

- c) List four (4) physiological and/or laboratory parameters that you would target in the ED to reduce bleeding. (4 marks)

1. _____

2. _____

3. _____

4. _____

- **Permissive hypotension** (MAP >65/ SBP> 90 mmHg/ palpable peripheral pulse)
 - NB some variability in texts re: MAP – range from 50 - 65. SBP more consistent at 80 – 100. All accepted
- Temp > 35C
- pH > 7.2, base excess < 6
- Ionised Calcium > 1.1 mmol/L
- Platelets >50 x 10⁹/L
- PT/APTT <1.5 x normal
- Fibrinogen > 2.0g/L –
 - NB Oh's Intensive Care Manual (online p1155) talks about the **trigger** for fibrinogen replacement as being 1g/L. Examiners note we have accepted that answers that state > 1g/L will get a full mark)
- Lactate <4
- Normal thomboelastography trace (ROTEM/TEG)

d) List five (5) potential complications of massive red cell transfusion. (5 marks)

1. _____
2. _____
3. _____
4. _____
5. _____

- Volume overload
- Dilutional coagulopathy
- Transfusion related acute lung injury (TRALI)
- Hyperkalaemia
- Hypocalcaemia
 - Citrate toxicity resulting in hypocalcaemia (Can't have a mark for both hypocalcaemia and citrate toxicity)
- ABO incompatibility
- Blood borne infections
- Hypothermia
- Metabolic acidosis
- Hypernatremia (in liver, renal or cardiac disease)

Question 4 (12 marks)

An 81 year old female is brought to the emergency department (ED) with a reduced level of consciousness.

Her observations are:

Temp	36 °C
HR	70 bpm
BP	170/90 mmHg
RR	16 /min
SaO ₂	98 % in room air
GCS	7 (E1, V2, M4)

A non-contrast CT brain has been performed. An axial slice is shown. **See Prop Booklet page X.**

a) List three (3) findings on the CT brain. (3 marks)

1. _____
2. _____
3. _____

- **Large, irregular L hyperdense lesion or large bleed or intracerebral bleed**
- Surrounding oedema
- Significant midline shift/mass effect
- Widespread L/ipsilateral sulcal effacement
- Compression of ipsilateral lateral ventricle
- Dilation of contralateral lateral ventricles indicating early hydrocephalus
- Intraventricular extension of bleed into ipsilateral ventricles
- “Black Hole” sign
- Mixed density or swirl sign

Examiner Notes:

- *If does not mention left lose 0.5 marks*
- *If noted the lesion on the right and not the left then 0 marks for this answer*
- *Did not accept herniation syndromes as not evident on this CT slice*

b) State the most likely cause for these findings. (1 mark)

-
- Spontaneous hypertensive intracranial bleed
 - Spontaneous bleed secondary to arteriosclerosis
 - Spontaneous bleed secondary to amyloid angiopathy

Examiner Notes: Did not accept tumour or cancer or metastasis as not the most likely diagnosis. Did not accept "spontaneous" as a cause.

You decide that palliation is the most appropriate course of management for this patient.

c) Prescribe (medication, dose, route of administration) four (4) medications, including indication to use for symptom relief. (4 marks)

	Medication	Dose	Route	Indication
1.				
2.				
3.				
4.				

Medication	Indication
Morphine 2.5-5mg sc hourly prn +/- 10 mg/24h via CSCI (can give up to 4 prn doses as above/24h) or Fentanyl 25-50 mcg hourly prn +/- 100 mcg/24h via CSCI (can give up to 4 prn doses as above/24h) Or Oxycodone 1.25 mg sc hourly prn +/- 5 mg/24h via CSCI (can give up to 4 prn doses as above/24h)	Pain/agitation
Clonazepam 0.25-0.5 mg sc prn BD or Midazolam 2.5 mg sc hourly prn or 10 mg/24h via CSCI	Anxiety/agitation
Haloperidol 0.5-1 mg sc 2-4h prn (or droperidol) or 1-3 mg/24h via CSCI	Agitation
Metoclopramide 10 mg sc TDS prn or 30 mg/24h via CSCI Or Cyclizine 25 mg sc q8h/prn +/- 75mg/24h via CSCI (can give prn doses as well) or	Nausea/vomiting

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Promethazine 12.5-25 mg Haloperidol 0.5-1 mg sc 2-4h prn (or droperidol) or 1-3mg/24h via CSCI	
Hyoscine butylbromide 20mg sc 4h prn or 60-120 mg/24h via CSCI or glycopyrrolate 200-400mcg s/c q2h prn or hyoscine hydrobromide 400 mcg	Secretions

Examiner Notes:

- *Or any other sensible suggestions. Okay to just have prn or the CSCI doses or a combination of CSCI with prn.*
- *Markers to decide on ½ marks for prescriptions without indication or vice versa.*

Did not need to mention ongoing prn – the emphasis is on the first dose

- *Dexamethasone for the reason of nausea*
- *Did not accept medications for seizures*
- *Ondansetron for the reason of nausea/ vomiting*
- *S/C or i/v is correct but not IM and not SL*

The patient has a rapid decline while still in the ED.

- d) State four (4) other measures that would facilitate good end of life care for the imminently dying patient and their next of kin. (4 marks)

1. _____

2. _____

3. _____

4. _____

- **Ensure private space for patient**
- Consider cultural needs e.g., ALO
- Consider religious and spiritual needs e.g. attendance of a person of significance for patient
- Cease regular vital signs observation and remove monitoring
- Social worker access/bereavement support for family/NOK
- Frequent repositioning of the patient for improved comfort
- Optimise comfort e.g., ambient room temperature, dim lights, blankets, own clothes
- Clear communication
- Transfer to palliative care ward if immediately available

Examiner Notes:

- *Did not give extra marks for a second private room for family*
- *Issues in order to decide palliation e.g., advanced care wishes did not answer the question*
- *Insufficient if mentioned palliative care referral without further details*
- *Other appropriate answers accepted*

Prop

