1. A 19 year old university student presents to the ED via ambulance. She is confused and has a widespread purpuric rash but no meningism. Her temperature is 38.7°C, HR 140 /min, BP 70/30 mmHg.

a. What is the likely diagnosis? (1 mark)

Meningococcal Septicaemia

b. List 4 immediate drug management priorities with doses. (4 marks)

1. Immediate antibiotic administration ceftriaxone 2g IV
2. IV fluids initial bolus 30ml/kg then further 20ml/kg titrated to response
3. Noradrenaline if poor response to fluid bolus 10mg in 100mls at 1-20mls/hr aim MAP >65 (or other reasonable dosing schedule)
4. PPE for staff particularly airway Dr

c. What other management needs to be considered? (2 marks)

- Prepare for physiologically difficult intubation
- Public health notification and staff plus contact prophylaxis
- Treatment of coagulopathy
- Disposition ICU

d. The patient is deteriorating despite aggressive intervention. The parents arrive in the resus room and 5 minutes later the patient has a cardiorespiratory arrest. Outline 3 issues around having the parents present in the resus room. (3 marks)

Many documented benefits for family: reduced PTSD, helps grief, seeing that everything done, felt supported patient, aids family cohesion/bonding. Negatives are can disrupt the resus and need to be removed, needs a dedicated staff member to look after family.

2. A 23 year old man with known asthma is brought to ED by ambulance with an acute exacerbation.

a. What features on history would concern you that his attack might be severe?

Known brittle, ICU admissions, Frequent steroid courses, significant co-morbidities, known poor compliance

b. What features on examination would suggest he had a severe exacerbation?
c. Clinical examination confirms he has had a severe episode. List and justify the investigations you would perform.

d. List your immediate treatment priorities.

3. A 25 year old woman presents to ED after a large wooden plank fell on her left foot. She describes pain in the mid-foot region.

a. What are the three components of the Ottawa foot rules (OFR’s)?

b. What are the three exclusion criteria for the application of the OFR’s?

c. Foot x-rays are taken and reveal an isolated un-displaced fracture of tuberosity of the navicular bone. What are 5 important features of your subsequent management?

4. A 40 year old male presents with swelling and pain in his right ankle. There is no history of recent trauma.

a. What are 4 major differential diagnoses?

b. What are 4 important features you would enquire about on history?

c. List and justify 4 investigations you would you order.
d. Following full assessment you are confident your patient has an STI. What are your 4 management priorities?

5. A 17 year old woman presented to ED after taking an overdose. She weighs 50kg and has taken 60 tablets of 300mg aspirin.

Her vital signs are:
HR 110 /min
RR 28 /min
BP 100/60 mmHg
Sats 100 % room air
Temp 36.5 °C

a. What features stratify her as high risk? (2 marks)

b. What investigations, apart from an ECG and paracetamol level, would you request? (2 marks)

c. She deteriorates further and requires intubation. What are the specific considerations when intubating patients who have taken an overdose of aspirin? (2 marks)

d. What are the indications for haemodialysis? (4 marks)

6. A 55 year old woman presents by ambulance. This is her appearance upon arrival in ED:
a. List 3 differential diagnoses.

b. List 5 features of her medical history that are particularly important to ask about.

c. State your first 5 management steps.

7. A 35 year old woman presents with palpitations and shortness of breath. On arrival her BP is 70/40 mmHg. An ECG is taken and is shown below.
a. What are 5 important features of the ECG?

b. List three possible differential diagnoses.

c. List the important steps in your immediate management.

8. The triage nurse rings you regarding a 32 year old with diabetes and bipolar disorder who is a frequent presenter to your ED. She often presents with disruptive behaviour but the nurse is concerned that today she appears disorientated, ataxic and complains of nausea and vomiting for the last two weeks.

Temp 37.4°C
HR 110 /min
BP 90/60 mmHg
RR 22 /min
Sats 97 % on air

Her lithium level is 3 mmol/L.

a. List 4 potential causes you would consider in this patient that may have resulted in lithium toxicity.

b. A urine bHCG confirms pregnancy, and a UTI. List four antibiotics used to treat UTI and discuss why you would or would not use them in pregnancy.
c. Your 4th year student asks you about the role of charcoal in lithium overdose. You explain that charcoal does not bind lithium. Name 3 classes of drugs seen in overdose that are not bound by charcoal and give two examples of each.

d. What alternative enhanced elimination technique may have a role in lithium toxicity?

e. Name 3 toxicokinetic or toxicodynamic features of a drug that make it amenable or appropriate to this method of enhanced elimination, and 2 other drugs toxicities where the method plays a role.

f. You find on questioning that it is likely she is 16/40 pregnant, homeless and with no regular medical care. List and expand briefly on 4 issues that should be discussed with this woman, including other services that may need to be involved.

9. A 35 year old woman who is 30 weeks gestation, is brought to your ED after a witnessed cardiac arrest.

a. What are the leading causes of maternal death in pregnancy? (4 marks)
b. List 5 airway and ventilation issues you could anticipate when attempting to intubate this patient. (5 marks)

Increased risk of aspiration – due to decreased lower oesophageal sphincter tone, increased abdominal pressure, decreased gastric emptying.

More oedematous airways – tongue and supraglottic airways oedematous, and more friable (therefore more likely to bleed and swell) (may need to use smaller ETT)

Decreased FRC and increased O2 consumption – develop hypoxia more quickly, less tolerant of apnoeic periods.

Mask ventilation more difficult due to low FRC, elevated diaphragms, and raised intraabdominal pressure.

Obesity relatively common in pregnancy, causing relative neck extension when supine (causing greater anterior placement of larynx). Also shorter neck in obese gravid women.

Large breasts, causing difficult larygoscopy

When ventilating, significant respiratory alkalosis should be avoided as this can cause decreased uterine blood flow.

c. What are the indications for a perimortem caesarean section? (1 mark)

Cardiac arrest in mother, gestational age >24 weeks (age of fetus in weeks corresponds to the distance in cm from fundus to symphysis pubis from 18–30 weeks).

Preferably within 5 minutes of arrest, up to 20 minutes – survival of infant directly related to the time elapsed from maternal arrest to delivery. Poorer neurological outcomes for child if performed > 5mins post arrest.

May benefit maternal outcome also – as it removes the aortocaval compression, and decreases abdominal pressure.

CPR should continue during and after the procedure.

Consent not required

d. Outline the steps in performing a perimortem c-section.

1. Make a vertical incision through the abdominal wall from the level of the uterine fundus to the symphysis pubis

2. If available, use retractors to expose the anterior surface of the uterus and retract the bladder inferiorly

3. Use a scalpel to make a small vertical incision through the lower uterine segment

4. Use bandage scissors to extend the incision vertically to the fundus

5. Deliver the infant, suction the nose and mouth, and clamp and cut the cord

10. You are working in the resus room on a patient who is intubated and has capnography attached.

What are four uses/indications of capnography in intubated patients?

11. A 28 year old man presents to the ED complaining of shortness of breath and pleuritic chest
pain. His arterial blood gases are as follows:

- pH 7.37
- pO2 8.0
- pCO2 2.3
- BE -2.0

a. Give three investigations, other than D-Dimer, you would perform. (3 marks)

b. At this stage give 4 risk factors as described by the BTS to exclude Pulmonary Embolism. (4 marks)

His D-Dimer result returns at 0.2 (normal range <0.14)
c. What 2 management steps would you now make? (2 marks)

d. The patient becomes acutely short of breath and hypotensive. What management step would you now take? (1 mark)

12. A 7 year old child presents to the ED with a 12 hour history of headache and photophobia, but no rash.

Urea and Electrolytes as follows

- Na+ 125 mmol/L
- K+ 3.7 mmol/L
- U 3.2
- Cr 51

a. Give 2 possible neurological diagnoses for the symptoms described. (2 marks)

b. What is the neurological cause for the Hyponatraemia? (1 mark)
c. What are 2 complications of Hyponatraemia? (2 marks)

d. List 5 investigations you would perform in the ED for a patient with Hyponatraemia. (5 marks)

13. A 45 year old man presents to the ED with a rash on his palm which is intensely itchy. The SHO thinks it is Scabies. A picture is shown below.

a. Describe 2 features of the rash. (2 marks)

b. Give the Diagnosis and one differential. (2 marks)

c. What causes the itching? (1 mark)

d. What are 2 other features of this condition? (2 marks)

e. What are 2 treatments that could be given to this patient? (2 marks)
f. What further advice would you give to the patient? (1 mark)

14. A 65 year old man is in your ED with a known overdose of Digoxin. An ECG has been performed and is shown below.

![ECG Image]

His U+E’s are Na+ 142 mmol/L, K+ 6.7 mmol/L, U50.1, Cr 502.

a. Describe 4 features of the ECG. (4 marks)

b. Give 3 indications for digibind. (3 marks)

c. List 3 other treatments for this patient and give reasons for using them. (3 marks)

15. A 30 year old female who works as an accountant and is known to have been depressed for some time is brought to the ED after having been found unresponsive.
An ECG has been taken on arrival and is shown below.

As you are looking at the ECG the patient has a fit.

b. Given this event, what is the most likely diagnosis for the patient? (1 mark)

c. What drug would you give and what is its mode of action? (2 marks)

d. What aspects of the patient’s condition would you monitor after giving this drug? (2 marks)

e. Give 4 other actions you would take to manage this patient’s fit. (4 marks)

16. A 65 year old male attends complaining of loss of vision in his left eye.
a. Give six features you would enquire about in the history. (3 marks)

visual acuity
flashers/floaters/ amaurosis fugax
trauma
headache/temporal pain/ systemic upset
neurological signs or symptoms
eye pain
previous medical history e.g. AF, TIA

b. List 2 abnormalities of the fundus shown in the picture above. (2 marks)

Venous engorgement and widespread haemorrhage. Sunset appearance

c. What is the diagnosis? (2 marks)

Central retinal vein occlusion

d. Give 6 associations of this condition. (3 marks)

Trauma - closed head
Vasculitis
Hypercoaguability states
Hypertension
DM
Alcohol
Glaucoma

17. A 10 year old girl has fallen off a wall and presents with a “sore arm”.
X-ray is shown below.

a. Give 3 features which are required to “clear the neck”. (3 marks)

Pt fully conscious
No evidence of intoxication
No neck pain/midline tenderness
No neurological deficit
No distracting injury
ROM >45° in all directions
Age < 65

b. Describe the x-ray. (1 mark)

Fracture distal shaft of humerus with posterior displacement

c. What is the diagnosis? (1 mark)

Supracondylar fracture humerus

d. What are 2 potential neurological complications of this injury and how would you test for them? (4 marks)

Median nerve palsy
- reduced sensation over the palm, reduced thumb opposition and wrist palmar flexion

Radial nerve
- reduced sensation thumb, reduced wrist dorsiflexion

e. Give an example of one other joint injury that can also give rise to nerve injuries. (1 mark)

Shoulder dislocation - axillary nerve
Neck of fibula fracture - peroneal nerve
18. A 38 year old woman 35 weeks pregnant comes to the ED with visual disturbance and headache. Her BP is 165/100 mmHg.

<table>
<thead>
<tr>
<th>FBC</th>
<th>WTU</th>
<th>LFT</th>
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</thead>
<tbody>
<tr>
<td>Hb</td>
<td>8.1</td>
<td>Blood ++</td>
</tr>
<tr>
<td>Plt</td>
<td>50</td>
<td>Protein+++</td>
</tr>
<tr>
<td>WCC</td>
<td>5.1</td>
<td>Nitrates -</td>
</tr>
</tbody>
</table>

- Poikilocytes seen

a. Describe 2 abnormalities of the FBC and explain them. (2 marks)

b. What is the likely diagnosis? (2 marks)

c. To control BP what drug, including dose and route, would you use? (3 marks)

d. Give 3 other steps in the management of this patient. (3 marks)

19. A 28 year old man has been out kite surfing and was thrown into the water at high speed. He is brought in on a spinal board with C-spine protection. He is intubated and ventilated and put on a propofol infusion.

His observations are: Pulse 65 /min, BP 90/60 mmHg and he is warm and well perfused.

The C-spine film and tomogram are shown below.
a. Describe 3 abnormalities on the x-ray. (3 marks)

b. Describe 2 aspects of his cardiovascular status. (2 marks).

c. What is the likely diagnosis? (2 marks)

d. What 3 signs would support this? (3 marks)

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A 42 year old man has been found outside the ED fitting. He is dishevelled and smells strongly of alcohol.

His BM is 2.4

a. What is the definition of status epilepticus? (1 marks)
b. Name 3 steps in managing his fitting. (2 marks)

Treatments: support airway and give high flow oxygen. And check BM
Give 4mg IV lorazepam or 10mg iv diazemuls.
Pabrinex IV replacement and then give 50mls 50% dextrose or 500mls 10%
dextrose IV.
May need phenytoin 18mg/kg IV or thiopentone 4-5mg/kg.

c. List 3 reasons for organising an urgent CT head on this man. (3 marks)

Reasons for CT: May have intracranial bleed requiring surgery.
May have meningitis.encephalitis and need LP and look for SOL.
Possibility of closed head trauma

d. Give 4 reasons why alcoholics are more prone to fit. (4 marks)

21. A 15 month child comes to the ED following a 3 day history of a viral illness with a
maculopapular rash. On the day prior to presentation he had bouts of colic but had been eating
and drinking and had been otherwise settled.

He comes to the department unwell, with bloody diarrhoea and a capillary refill time of 3 seconds.

This is his abdominal x-ray.

a. What is the likely diagnosis? (2 marks)
b. List 3 predisposing factors. (3 marks)

Viral illness, cystic fibrosis, benign or malignant bowel tumours - e.g. putz Jeager, Meckel’s, coagulopathies e.g HSP - causing haematomas, sutures and staples, inverted appendiceal stump, Male gender

c. What are the child’s fluid requirements over the next 12 hours? (3 marks)

Fluids - 1 year old = 10kg, 500 ml over 12 hours, keep UO 2 ml/h

d. Name 2 treatment options. (2 marks)

Air contrast/hydrostatic enema if large bowel involved, Surgical

22. A 60 year old man comes to the ED with his sister. She says he has been withdrawn and quiet lately, and has been saying he wants to die.

a. Give 6 features in assessing his risk of suicide. (6 marks)

Sex, Age, Depression - H/O, Previous attempt at suicide, Excessive alcohol/drugs, Rational thinking loss, Separated/divorced/widowed, organised/serious attempt, No social support, Suicide intent for the future

b. What are 4 important aspects of the mental health act in the state where you work? (2 marks)

No model answer provided

c. How would you ensure this patient could make a decision regarding his treatment? (2 marks)

No model answer provided

23. A man staggers into your department and says that he and many other people have been on a train and were sprayed with a liquid. He then collapses.

a. Other than calling your ED consultant, give 4 actions you would take to manage the situation. (3 marks)

1. Isolate the pt - undress and destroy clothes, thoroughly wash all done in protective gear
2. inform unit/hospital manager
b. Give 4 muscarinic effects of organophosphate poisoning. (4 marks)

c. Give 3 drugs to treat organophosphate poisoning.

24. A 3 year old girl attends your department late one night. She has stridor but is alert, and has previously been well.

a. Apart from croup, give 4 differential diagnoses. (2 marks)

b. List 3 drugs, the dose and route of administration used to treat croup. (3 marks)

c. Give 4 aspects of the scoring system to evaluate croup. (4 marks)

d. Give 2 reasons to admit a child with croup. (1 mark)
25. A 35 year old male attends your department. His partner is HIV positive and being treated for TB.

Blood gases on 60% oxygen show:
- pH 7.44
- pCO2 4.0 Kpa (30mmHg)
- pO2 16.5 Kpa (124mmHg)
- Bicarb 22 mmol/L
- Base Excess -1

Chest x-ray is shown below.

a. Describe the chest x-ray. (2 marks)

b. Excluding TB, give 2 differentials diagnoses. (2 marks)

c. List 3 organisms that may infect the pulmonary system in HIV. (3 marks)

d. Give 6 tests in the ED which would help in the management of this patient. (3 marks)

26. A 24 year old male had been assaulted. He has swelling around his LEFT eye and a cut on his RIGHT cheek. Your SHO has requested facial views.
a. Give 3 abnormalities on the x-ray. (3 marks)

b. List six aspects of assessment of the orbit and its contents. (4 marks)

c. List 3 further steps in this patient’s management. (3 marks)

27. A 35 year old man is flown in by air ambulance after being found unconscious in a remote area of bushland in winter. He is in asystole and the ambulance officers are currently performing CPR. His Temp is 28.6°C.

a. What is the current advanced life support algorithm? (3 marks)
b. What are the major modifications needed to be made to this algorithm in the case of unintentional (environmental) hypothermia? (3 marks)

- Start and continue ALS until patient is rewarmed (Temp ≥ 32°C) unless other obvious lethal injuries present
- Withhold drugs until temp ≥ 30°C then double interval between giving drugs until temp ≥32°C
- Can defibrillate initially 3 x if in VF/VT but then cause (as no effect) until temp ≥ 30°C
- Main therapy is re-warming

4 marks (2 each)

iii. Passive external rewarming
- Warm environment
- Remove wet clothes and dry patient
- Insulation blankets
- Warm blankets

iv. Active external rewarming
- Warmed and humidified air/O2
- Warm forced air blanket
- Heat packs to torso/armpits/groin

28. A 25 year old man sustains facial injuries in a high speed motor vehicle crash in which he was the unrestrained driver.
His observations are:
GCS 15
HR 100 /min
BP 130/75 mmHg supine
O₂ sat 97 % room air

a. Describe 3 abnormalities shown in this photograph. (3 marks)

b. What 3 underlying injuries could there be? (3 marks)

b. List 5 factors that provide a risk to his airway? (5 marks)

29. a. List 4 indications for endotracheal intubation. (4 marks)
b. List 2 indications for non-invasive ventilation. (1 mark)

c. List 4 contra-indications to NIV. (2 marks)

d. What is the mechanism of action of NIV? (3 marks)

30. A 65 year old male presents following a fall. He complains of a painful swollen left wrist.
An x-ray of his wrist is shown below.

a. Describe his x-ray. (2 marks)

b. List the contra-indications to performing a Bier's block. (4 marks)
c. List the key steps in performing a Bier’s block. (4 marks)

1. Consent – ideally written
2. Area / staff / monitoring
3. Bilateral iv access – no marks if only iv access mentioned must specify bilateral
4. Check equipment
5. Inflate cuff – ideally answer should state >100mmHg above systolic
6. Injection of local anaesthetic – prilocaine ideally but accept lignocaine (as per Dunn & Tintinalli)
7. Perform procedure – MUA wrist
8. Deflate cuff / post-procedural monitoring

31. A 4 year old boy is brought to your ED having sustained a 4cm eyebrow laceration following a fall at a playground. He is accompanied by his mother. You plan to suture the wound under procedural sedation using ketamine.

a. List 8 contraindications to ketamine use in this setting. (4 marks)

1/2 mark each up to 4 marks from the following:
- Parental refusal
- Procedural required unsuitable for ketamine sedation
- Inadequate staffing / area / equipment
- Previous adverse reaction to Ketamine
- Altered conscious state
- Unstable patient: seizures, vomiting, hypotension
- Cardiovascular disease – heart failure, uncontrolled hypertension, congenital heart disease
- Procedures involving stimulation of posterior pharynx
- Known airway instability or tracheal abnormality
- Psychosis
- Thyroid disorder or medication
- Porphyria
- Risk of raised intraocular or intracranial pressure
- Active pulmonary infection or disease including acute asthma and URTI
- Full meal within 3 hours (relative contraindication only, balance risk against urgency of procedure)

b. List 4 potential side effects/complications associated with ketamine use in this setting. (2 marks)

1/2 mark each up to 2 marks from the following:
- Airway obstruction
c. Complete the following table regarding ketamine usage in paediatric procedural sedation by route of delivery. (4 marks)

<table>
<thead>
<tr>
<th></th>
<th>Intra-muscular (i.m)</th>
<th>Intra-venous (i.v)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial dose</strong></td>
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<tr>
<td><strong>Top-up dose</strong></td>
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<td><strong>Advantage</strong></td>
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<td></td>
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<tr>
<td><strong>Disadvantage</strong></td>
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</table>

32. a. What patient factors may make rapid sequence intubation difficult or impossible? (3 marks)

b. What alternatives should be considered in these cases? (2 marks)

c. List the steps of preparation for rapid sequence induction. (5 marks)
33. a. Name 2 indications for electrical defibrillation. (2 marks)

b. Name 2 areas to avoid placement of pad. (2 marks)

c. Name 4 complications of defibrillation. (4 marks)

4.

d. How will you optimise transthoracic impedance while using a defibrillator for an adult patient? (2 marks)

4.

34.a. Name composition of normal saline and Ringer’s lactate. (2 marks)

b. What are the targets to titrate fluid therapy? (4 marks)

c. What are the complications of fluid therapy? (4 marks)

35. A 60 year old male presents to your ED complaining of chest pain for the last 2 hours. He has
no known medication history and does not take any regular medications.

His ECG on arrival is below.

![ECG Image]

a. What is your interpretation of his ECG? (3 marks)

- Inferior STEMI (1 mark)
- Complete heart block (1 mark)
- 1 mark for any of:
  - Possible RV involvement (STE III>II)
  - Possible posterior involvement (Flat ST depression V2-V3)
  - Bradycardia

b. The patient’s blood pressure is 80 mmHg. Outline the key steps in managing his hypotension. (4 marks)

- Main priority revascularisation - angioplasty/thrombolysis (1 mark)
- Cautious fluid bolus - must acknowledge risk of pulmonary oedema or use bolus <500ml (1 mark)
- 1 mark each for any two of:
  - Atropine - likely to be ineffective
  - Avoid/cease GTN
  - Transcutaneous pacing
  - Inotropes as listed below only
    - IABP - only acceptable if preceded by revascularisation

c. The cardiology team have advised you to commence the patient on a vasoactive agent to improve his blood pressure. List 3 appropriate inotropes/vasopressors and their dosing in the table below. (3 marks)
1. Dopamine 3 – 5 mcg/kg/min to maximum of 20 – 50 mcg/kg/min

2. Dobutamine 2 – 5 mcg/kg/min to maximum of 20 mcg/kg/min

3. Noradrenaline 2 mcg/min up titrate to response

a. Outline a step-wise approach to the patient’s bradycardia and hypotension? (4 marks)

b. Clinical toxicology have been consulted and advised you to commence HDI therapy. How is HDI administered? (4 marks)
c. What are the potential complications associated with HDI therapy? (2 marks)

1 mark for each of:
- Hypoglycaemia
- Hypokalaemia


37. A 72 year old diabetic female is brought to your Emergency Department by ambulance. She complains of feel generally unwell for the last two days with abdominal pain, cough and fevers.

Vitals signs:
- Pulse 121 /min
- BP 89/58 mmHg
- RR 28 /min
- Sats 89 % Room Air
- Temp 39.8 ºC

a. List 3 key steps in this patient’s management. (3 marks)

b. List your resuscitation goals for the first 6 hours. (4 marks)

c. The patient requires inotropic haemodynamic support. Which inotrope should be used? (1 mark)
38. A 16 year old boy with a congenital heart problem presents to ED with episodes of syncope. This is his ECG.

a. Describe the ECG. (5 marks)

Paced rhythm rate 75 bpm
Loss of capture
Period of ventricular standstill
Occasional ventricular ectopic/escape beats
P waves rate 75–100 bpm, complete heart block

b. Name 5 potential causes for this appearance. (5 marks)

Lead breakage or displacement causing pacemaker failure
Fibrosis causing pacemaker failure
Electrolyte abnormality
Toxicological causes – Ca channel/B blocker/digoxin toxicity
Failure to capture/needs check of threshold for capture

39. A 46 year old man is brought to your ED by ambulance following an overdose of unknown medications. He had a brief generalised seizure en route.

On arrival his observations are:

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<table>
<thead>
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<tbody>
<tr>
<td>GCS</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>85/60 mmHg</td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>37.0 °C</td>
<td></td>
</tr>
<tr>
<td>O₂ Saturation</td>
<td>100 % on 8 L/min O₂</td>
<td></td>
</tr>
</tbody>
</table>
His ECG is shown below.

- Rate 150, Axis normal, Rhythm irregular broad complex tachycardia, R Prime AVR
- Interpretation consistent with Na Channel Blockade
- QRS upper limit or slightly prolonged,
- QT almost half the RR along with examples gave extra marks

b. What are the first 5 things you would do to manage the patient?

- Mx in resus area, team approach, delegate care of rest of department
- Treatment with NaHCo3 (50 ml 8.4%, repeat to achieve pH 7.5 and QRS <120ms)
- Fluid Mx for hypotension (1 litre 0.9% NaCl stat and repeat if necessary to achieve MAP >65mmHg)
- Benzodiazepines for seizures (appropriate dose for agent chosen)
- RSI and ventilation to low normal CO2

40. An elderly man collapses and is unresponsive at a shopping centre.

He receives prompt BLS from bystanders, then defibrillation from an AED prior to the arrival of the ambulance 10 minutes post-arrest. He is found to be in VF and does not revert with defibrillation by the ambulance crew. He is transported to the ED, where he is still pulseless and the monitor shows this rhythm.
What are your immediate actions? (8 marks)

Assume leadership, delegate roles
Ensure continuous BLS provided throughout
Manual biphasic shock 200J
Continue CPR 2 minutes
During CPR:
Check electrode position
Secure IV access
Adrenaline 1mg and repeat after second shock and every second loop
Correct reversible causes (4Hs, 4Ts)
Advanced airway
Amiodarone 300mg after 3rd shock
Post-resuscitation care/lead ECG/reperfusion

From ARC Resuscitation guideline, online, accessed 5/8/2014

41. A 24 year old woman has just died in your ED despite active resuscitation after sustaining massive head injuries in a motor vehicle accident. Police are in attendance but her family members are unaware of the situation.

a. Provide 6 principles to follow when communicating the news to the family. (6 marks)

Do not tell them over the phone
Say relative is unwell and they need to attend urgently
On arrival, greet in person
Delegate other roles so you will be uninterrupted
Have another staff member present
Introduce yourself and confirm identity and relationship to deceased of all present
Summarise what has happened and state that the patient has died
Do not use euphemisms
Allow whatever form of grief reaction occurs the time and space needed
Ask for and answer questions
Allow viewing of body
Use touch to comfort if appropriate
Offer food and drink
Give access to telephone
Offer pastoral care referral

b. Provide 4 circumstances when a death must be reported to the coroner. (4 marks)

Where there is any suspicion the death is not from natural causes
The term “reportable death” means a Western Australian death – (a) that appears to have been unexpected, unnatural or violent or to have resulted, directly or indirectly, from injury;
(b) that occurs during an anaesthetic;
(c) that occurs as a result of an anaesthetic and is not due to natural causes;
42. You are the duty consultant. A 30 year old patient is being brought in by the paramedics as a Priority 1 patient (ETA 5 mins). He was found hanging by his friend at home. Initial rhythm was PEA. The paramedics have been working on the patient for 55 minutes and the patient has not regained circulation. You have been informed that patient is intubated and there is an IO access in.

a. How will you generally prepare for the patient’s arrival? (4 marks)

b. A decision was made to call off the resuscitation attempt immediately after patient arrival. Describe the next steps you will take, (6 marks)

43. You are checking pathology results when you come across a positive chlamydia result. The pathologist has flagged that this is a notifiable disease.

a. What action should you take? (5 marks)

b. Give three other examples of incidents that require mandatory reporting in the ED. (5 marks)
44. You have been asked by the Head of your ED to give a presentation on Access Block and the National Emergency Access Target (NEAT).

a. What is the definition of Access Block? (2 marks)

This refers to the percentage of patients who were admitted or planned for admission but discharged from the emergency department (ED) without reaching an inpatient bed, transferred to another hospital for admission, or died in the ED whose total ED time exceeded 8 hours, during the 6 month time period. Taken from ACEM Policy on Standard Terminology P02v4 March 2009

1 mark for recognising proportion / percentage of patients who do not reaching in-patient bed
1 mark for accurate time frame of exceeding 8 hours

b. What is the National Emergency Access Target? (2 marks)

The National Emergency Access Target requires that by 2015, 90% of all patients presenting to a public hospital Emergency Departments will be admitted, transferred or discharged within four hours – Applies to all of Australia. Taken from WA Government Emergency Access Reform Web Site.

NOTE – New Zealand Access Time Target is 95% within six hours.

1 mark for correct percentage of patients to be admitted.
1 mark for correct time frame of within 4 hours.

c. Outline potential solutions to improving Access Block & Overcrowding (6 marks)

2 Solutions to access block and overcrowding

<table>
<thead>
<tr>
<th>Reducing demand</th>
<th>Increasing capacity</th>
<th>Improving exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the community</td>
<td>Emergency department processes</td>
<td>Ward processes</td>
</tr>
<tr>
<td>• Improved funding of complex care for general practitioners and community providers</td>
<td>• Fast-tracking</td>
<td>• Morning discharge</td>
</tr>
<tr>
<td>• Improved planning for end-of-life care</td>
<td>• Laboratory and x-ray turnaround times</td>
<td>• Weekend discharge</td>
</tr>
<tr>
<td>• Mandate for residential care</td>
<td>• Senior staffing 24/7</td>
<td>• Improved allied health and pharmacy access</td>
</tr>
<tr>
<td>• Improved education of community and providers</td>
<td>• Full capacity protocol (send patients to ward when emergency department is full)</td>
<td>• Better use of transit lounge</td>
</tr>
<tr>
<td>• Coordination of community services</td>
<td>Emergency department beds</td>
<td>Community capacity</td>
</tr>
<tr>
<td>• Reduce duplication between state, federal and community services</td>
<td>• Only to the levels recommended by the Australasian College for Emergency Medicine</td>
<td>• Increased residential aged care beds</td>
</tr>
<tr>
<td>• Integrated and coordinated care of “frequent attenders”</td>
<td>Ward processes</td>
<td>Post-acute care services</td>
</tr>
<tr>
<td>• Hospital outreach — hospital-in-the-home, hospital-in-the-nursing-home, and medical assessment teams</td>
<td>Whole-of-health service bed coordination 24/7</td>
<td>Monitoring of acute health sector</td>
</tr>
<tr>
<td>In the emergency department</td>
<td>• Designated bed coordinator</td>
<td>• Emergency department processes</td>
</tr>
<tr>
<td>• Senior decision making (24/7)</td>
<td>• Daily coordination rounds</td>
<td>• Hospital processes</td>
</tr>
<tr>
<td>• Short-stay units</td>
<td>• Improved information technology for bed tracking and demand prediction</td>
<td>• Community processes</td>
</tr>
<tr>
<td>• Accelerated evidence-based protocols</td>
<td>• Long-stay monitoring</td>
<td>Non-solutions (improvement to reduce overcrowding)</td>
</tr>
<tr>
<td>• Access to consultations and investigations</td>
<td>• Clinical inpatient rounds at least daily</td>
<td>• Nurse on call</td>
</tr>
<tr>
<td>Balancing demand between elective and emergency programs</td>
<td>• Improved speed of investigations and consultations</td>
<td>• Ambulatory care clinics</td>
</tr>
<tr>
<td></td>
<td>Ward beds</td>
<td>• Ambulance bypass</td>
</tr>
<tr>
<td>• Increase to ≥ 3 acute hospital beds per 1000 population</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
45. a. You are about to see a 4 year old child in ED. Name 3 people considered to have parental responsibility. (3 marks)

D.

b. Name 3 subsets of ED patients who might not be able to provide consent. (3 marks)

c. You are dealing with a hypotensive 6 year old child who was involved in an accident. The patient has free fluid in the abdomen on FAST scan. You need to urgently transfuse the child but the parents are Jehovah Witnesses and are opposing transfusion. Name 2 immediate steps you would take in this situation. (2 marks)

d. What is the legal age of consent in Australia? (1 mark)

46. a. Name 2 types of consent in the ED. (2 marks)

b. You are going to perform a chest drain on a conscious patient. He is a 60 year old man with a history of COPD who has 50% pneumothorax. His vitals are: Pulse 90 /min, BP 140/80 mmHg, RR 28 /min, Sats 93 % on 2L NP Oxygen. Provide 6 principles you would follow when obtaining consent from your patient. (6 marks)
47. You have been invited to join your Emergency Department’s Quality Improvement Workgroup.

a. List the key steps in the Quality Improvement Cycle. (4 marks)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Mark(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Change plan</td>
<td>1</td>
</tr>
<tr>
<td>Do</td>
<td>Implement change</td>
<td>1</td>
</tr>
<tr>
<td>Check</td>
<td>Monitor and review change; audit</td>
<td>1</td>
</tr>
<tr>
<td>Act</td>
<td>Revise/review plan; repeat cycle</td>
<td>1</td>
</tr>
</tbody>
</table>

Exact wording not required; statements consistent with concept will be given marks.

b. List 6 clinical indicators used in Emergency Medicine to measure clinical care and outcomes. (6 marks)

- ATS Compliance
- % Access block
- STEMI – time to angio/thrombolysis
- Admission rates
- DNW Rates
- Number of deaths in ED
- Time to antibiotics
- Time to analgesia
- NEAT Compliance
- Trauma audits
- Satisfaction surveys
- Patients or staff
- Staff retention/sick leave
- Patient complaints audit
- Notes audits
- Occupational health and safety audits
- Staff injuries or needle sticks
- Missed results audit

List not exhaustive.

48. There have been a number of incidents in your ED Short Stay Unit where patients have unexpectedly deteriorated during their stay.

a. Provide 2 examples of the role of a Short Stay Unit. (2 marks)

- To manage Emergency Medicine patients who would benefit from extended treatment and observation but have an expected length of stay of less than 24 hours.
b. What steps would you take to develop a solution to this problem of patients unexpectedly deteriorating during their stay? (4 marks)

Gather information – 1 mark
Develop solution plan – 1 mark
Implement plan – 1 mark
Audit / Re-collect data – 1 mark

Note exact wording not essential but plan must include aspects of each of these domains to score maximum marks.

c. You have been asked to develop a set of exclusion criteria for your Short Stay Unit. List your exclusion criteria. (4 marks)

½ mark for each exclusion criteria to maximum of 4 marks.

Patients who should be admitted to in-patient wards – complex medical or surgical problems
Multiple problems
Elderly patient
Paediatric patients
Patients without clear management plan / diagnosis
Patients with intensive nursing requirements
Risk to staff patients – psychotic, violent, forensic history

49. a. Define triage. (3 marks)

Answer must include: a process for sorting patients based on the urgency of need for medical care (3 marks)

b. What are the underlying principles of triage? (2 marks)

Answer must include equity (or justice/fairness) and efficiency (2 marks)

May also mention ongoing process, doing the greatest good for the greatest number, fairness/appropriateness of treat those in greatest need ahead of those who arrived before them.

c. Populate the following table with the correct values. (5 marks)

<table>
<thead>
<tr>
<th>ATS Category</th>
<th>Max waiting time</th>
<th>ACEM target % seen in time</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS 1</td>
<td>immediate</td>
<td>100%</td>
</tr>
<tr>
<td>ATS 2</td>
<td>10 minutes</td>
<td>80%</td>
</tr>
<tr>
<td>ATS 3</td>
<td>30 minutes</td>
<td>75%</td>
</tr>
<tr>
<td>ATS 4</td>
<td>60 minutes</td>
<td>70%</td>
</tr>
<tr>
<td>ATS 5</td>
<td>120 minutes</td>
<td>70%</td>
</tr>
</tbody>
</table>

50. A 2 week old term baby weighing 4kg is brought to the ED with difficulty breathing and
Her vital signs are as follows:
HR 160 / min
BP 65/35 mmHg
Sat 83 % on air
Temp 37.6 °C
CRT 4 seconds

She is lethargic, and will respond to voice.

a. List 4 differentials for her presentation.

b. List your treatment priorities in sequential order. (4 marks)

c. You decide to intubate this baby. What 2 sizes of ETT will you prepare?

51. A 4 year old boy presents to the ED with cough, stridor and fever.

a. List 4 causes of stridor in this patient. (4 marks)
b. List 4 features on history or examination that would make epiglottitis a more likely diagnosis. (4 marks)

- Not immunised
- Acute onset of illness
- Toxic/shocked appearance
- Very high fever
- Drooling
- Cough minimal or absent
- Low pitched stridor

C. In a patient with suspect epiglottitis, what are your management priorities? (2 marks)

- Keep child as calm as possible, avoid unnecessary interventions
- Secure airway – ideally in theatre with gas induction
- Source control – 3rd generation cephalosporin (cover HiB + others)

52. A 12 month old child presents to ED with a widespread red rash and difficulty breathing shortly after eating peanut butter for the first time.

Her vital signs are

<table>
<thead>
<tr>
<th>HR</th>
<th>150 /min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sat</td>
<td>88 %A with wheeze, no stridor</td>
</tr>
<tr>
<td>RR</td>
<td>50 /min</td>
</tr>
<tr>
<td>BP</td>
<td>60/30 mmHg</td>
</tr>
<tr>
<td>GCS</td>
<td>15/15</td>
</tr>
</tbody>
</table>

a. What is the initial dose and route of administration of adrenaline (1:1000) in millilitres for this patient? Show your working. (3 marks)

Expected weight for a 1 year old = (1 + 4)x2 = 10kg
Dose of adrenaline = 0.01 ml/kg of 1:1000 = 0.1ml IM

b. List 4 other treatments (with doses) that you would consider giving as adjuncts to IM adrenaline. (4 marks)

- 20ml/kg (200ml) 0.9% NaCl bolus
- Salbutamol nebuliser 5mg
- Adrenaline nebuliser 5mg
- Hydrocortisone 4mg/kg (40mg) IV or prednisolone 2mg/kg = 20mg
- Antihistamine – Cetirizine 2.5mg or chlorpheniramine 2mg
- Oxygen at 6L per minute/to maintain sats >92%
- Not promethazine – contraindicated in <2
c. After a period of observation you decide to discharge the child with a prescription for an EpiPen. List 3 important pieces of discharge advice. (3 marks)

- Educate how and when to use EpiPen (action plan)
- Warn about biphasic reaction. Watch for return of symptoms – administer epipen and return immediately to ED – call 111
- Avoid all foods with peanuts (read labels/ask when eating out) +/- tree nuts
- See GP in 24-48h for review

53. A 3 month old girl is brought in to ED with pallor and lethargy for the past hour. She has had fevers and URTI symptoms for the past 3 days.

Her observations are as follows:

<table>
<thead>
<tr>
<th>GCS</th>
<th>15/15 but floppy/lethargic</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>250 /min</td>
</tr>
<tr>
<td>BP</td>
<td>75/45 mmHg</td>
</tr>
<tr>
<td>CRT</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Sat</td>
<td>95 %A</td>
</tr>
<tr>
<td>Temp</td>
<td>38.2 °C</td>
</tr>
</tbody>
</table>

This is her ECG.

a. What is the most likely diagnosis? (1 mark)

b. What are 2 features of the ECG that support this diagnosis? (2 marks)
c. List 3 treatment options in the order of escalation that you would perform them. (3 marks)

1. Vagal manoeuvres
   - Dunk head in ice water or cold face cloth dropped on face
2. Adenosine IV 100mcg/kg (can double dose Q2min up to 400mcg)
3. DCCV cardioversion
   - Sync 0.25 - 0.5J/kg (with sedation)

54. A 32 year old woman presents to your tertiary ED from her GP.

She has been referred with a letter stating:

“Thank you for reviewing this 32 year old who has recently returned from a trip to the UK, she has pleuritic chest pain and I am concerned about a possible PE.”

a. Name 3 risk stratification tools that you use to guide your assessment. (3 marks)

   - Wells
   - PERC
   - Modified Geneva

b. You calculate a Wells score of 3. What is the patient’s risk of PE? (1 mark)

   20%

c. A D dimer is 1100 and you need to discuss imaging with the patient. List 3 benefits and 3 negatives of CTPA. (3 marks)

   Benefits (any of)
   - Effective gold standard test
   - Sensitive compared to VQ
   - Evaluates clot burden
   - May give alternative diagnosis
   - Available to ED
   - Relatively rapid
   - Minimally invasive (cc angiogram)

   Negatives (any of)
   - Radiation
   - Contrast allergy
   - Contrast nephrotoxicity
   - Difficult IV access
   - Expensive
   - Can miss small sub-segmental (particularly if older gen CT).

d. The CTPA is positive for bilateral proximal PEs. The patient has a BP of 100/70 mmHg, HR 98/min, SpO2 94% RA. How could you risk stratify her further with regards to possible treatment? (3 marks - need to only list 3 to score 2.5, 4 scores 3 marks)

   - Echo
     - Signs of RV strain
55. A 4 year old boy presents to your ED at 1830h with his mother. He has had a runny nose, cough and wheeze for 2 days. His past history includes asthma and eczema since 18 months of age. He has required several hospital admissions for asthma.

a. List 6 important clinical signs when assessing this child. (3 marks, 0.5 marks each)

- Level of consciousness
- Respiratory rate (<20 or > 40)
- Work of breathing – use of accessory muscles
- SPO2
- Chest auscultation – presence of wheeze / lack of b/s eg silent chest
- PEFR – if able (likely to be too young)
- Cyanosis
- Ability to speak – words vs short sentences vs long sentences

b. He does not have an oxygen requirement and is assessed as “mild”. List treatment in ED including doses. (1 mark, 0.5 marks each)

- Salbutamol 100mcg per puff via MDI and spacer 6 puffs per dose (accept slight variation depending on region)
- or
- Salbutamol via nebuliser 2.5mg – 5mg
- Prednisolone 1mg/kg (accept alternative steroid if dose appropriate)

c. The child improves and you wish to educate his mother in spacer and MDI technique and in spacer care. List 6 points that you will cover. (3 marks, 0.5 marks each)

- Shake the MDI vigorously
- Prime the spacer with 10 puffs of salbutamol (accept 6-12 puffs)
- Hold the spacer tightly against the child’s face (may require two operators)
- Deliver 1 puff then wait for 6 breaths
- Deliver a total of 6 puffs
- Wash the spacer in warm soapy water
- Do not rinse the spacer
- Allow to drip dry

d. List discharge criteria and advice you would give his parents. (3 marks, 0.5 marks each)

- Sustained improvement with no requirement for salbutamol for > 2 hours
- No O2 requirement
- Adequate access to transport and phone
- Safe distance from hospital
- Competent and willing parents or caregiver
- No prior hx of ventilation or ICU admissions
- No prior hx of precipitous rapid decline
- Adequate community follow-up

Action plan for parents – return if requires > 4 hourly salbutamol (accept range 2-4 hourly)
56. A factory worker presents to your department with 3% body surface area burns to his hands and forearms from a 100% hydrofluoric acid solution.

a. What percentage of body surface area burns would be expected to be associated with systemic toxicity from this acid and how does it cause toxicity?

b. List 3 investigations that may be useful to help determine further management of this patient and describe the abnormality that may be detected.

c. Name the antidote used to treat hydrofluoric acid toxicity.

d. List 3 routes by which it may be administered and the dose typically used for each route.

<table>
<thead>
<tr>
<th>Route</th>
<th>Dose Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topically</td>
<td>gluconate gel (2.5%) can be applied immediately to the skin after exposure</td>
</tr>
<tr>
<td>Intradermally</td>
<td>difficult in the fingers to give adequate volume. Usual dose = 0.5ml/cm² of Ca Gluconate (avoid Ca CO₃)</td>
</tr>
<tr>
<td>Regional IV infusion</td>
<td>dilute 1g of Ca Gluconate in 40mls of NaCl, infuse into the arm and leave the cuff inflated for 20 minutes.</td>
</tr>
<tr>
<td>Intra-arterial infusion</td>
<td>dilute 1 ampoule of Ca gluconate in 40 ml normal saline &amp; infuse over 4 hrs. Can be repeated as necessary.</td>
</tr>
</tbody>
</table>

57. A 3 year old child is brought into ED with a history of having ingested ‘at least’ 20 of her mother’s iron tablets.

a. List 2 clinical features of significant iron toxicity that are likely to be seen within the first 6 hours after the ingestion.

b. List 2 investigations that may be helpful in confirming that a patient has ingested iron tablets and when the abnormality is likely to be detected.

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdo XR</td>
<td>iron tablets are radio opaque so will be visible in the stomach on AXR.</td>
</tr>
<tr>
<td>Serum Hb</td>
<td>low may indicate severity of poisoning.</td>
</tr>
<tr>
<td>CRP</td>
<td>elevated with higher severity.</td>
</tr>
<tr>
<td>Blood film</td>
<td>pale &amp; immature red cells.</td>
</tr>
<tr>
<td>Radiograph of Abdo</td>
<td>may show hepatomegaly or splenomegaly.</td>
</tr>
<tr>
<td>Urine Hb</td>
<td>increased with higher severity.</td>
</tr>
</tbody>
</table>
c. List 2 methods of decontamination that may be useful in the management of iron toxicity and their indications for use.

Whole bowel irrigation – recommended for ingestions of > 60mg/kg confirmed on AXR.

Endoscopic removal – if potentially lethal ingestion where WBI fails or is impossible.

d. Name the antidote used to treat iron toxicity and list 2 indications for its use.

Desferrioxamine

Indications for use are:
- Iron levels > 90 micmol/L (500micg/dL) – as this predicts systemic toxicity.
- Signs of systemic toxicity including Shock, Metabolic Acidosis, Altered mental status.

58. A 32 year old female with a history of bipolar disorder is brought in by ambulance after having taken her weeks worth of lithium. She is alert and orientated and complains of no systemic symptoms at this time.

a. List two early signs or symptoms that suggest a significant amount of Lithium has been ingested acutely and the earliest and most frequent sign of neurological toxicity associated with Lithium ingestion.

GI symptoms ie:
- Nausea
- Vomiting
- Diarrhoea
- Abdominal pain – occur with significant acute ingestion

Tremor is the earliest sign of neuro toxicity.

b. List 2 tests that may have an influence on further management of a patient presenting after an acute overdose of lithium and explain why they may be relevant.

AXR – may show concretions of tablets in the stomach, indicating need for aggressive GI decontamination.

U & E’s – renal impairment may be an indicator of the need for dialysis. Hypokalaemia can be a complication.

Serum Lithium level – to confirm ingestion, monitor progress & determine safety of
c. List two treatments that may be considered for a patient suffering from acute Lithium toxicity and one possible indication for each.

59. A 20 year old female presents saying she has taken an overdose of aspirin.

a. List 4 features of acute salicylate intoxication and the dose expected to cause severe toxicity.

> 300mg/kg causes severe toxicity.
Symptoms include (Together known as salicylism):
• Tachypnoea
• Tinnitus
• Vomiting
Progressing to altered LOC / seizures / hyperthermia / metabolic acidosis / pulmonary oedema (10%) and alveolar haemorrhage

b. What method of decontamination may be useful in the management of salicylate toxicity and for up to how long after the ingestion?

Activated charcoal – for up to 8 hours post ingestion (as gastric emptying can be delayed after an OD). A repeat dose after 4 hours may also be useful.

c. Name 2 methods of enhancing the elimination of salicylates and list 1 possible indication for each.
left lower leg.

a. List three complications that are likely to occur within the next 48 hours. (3 marks)

3. 

b. List the management priorities for this injury. (5 marks)

c. What factors contribute to damage? (3 marks)

61. A 34 year old man presents 10 days after a business trip to Papua New Guinea. He has had fevers, malaise, generalised aches and frequent episodes of diarrhoea.

His vital signs are:

<table>
<thead>
<tr>
<th>HR</th>
<th>130 /min</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>100/50 mmHg</td>
</tr>
<tr>
<td>Temp</td>
<td>38 °C</td>
</tr>
<tr>
<td>Sats</td>
<td>98 % on air</td>
</tr>
</tbody>
</table>

a. List 10 potential causes of fever and illness in this man.
b. What blood tests will you request?

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBC</td>
<td>Part of fever workup.</td>
</tr>
<tr>
<td>EUC</td>
<td>Unwell, diarrhoea → potential derangement</td>
</tr>
<tr>
<td>LFT</td>
<td>Hepatitis possible</td>
</tr>
<tr>
<td>Blood culture</td>
<td>Part of workup</td>
</tr>
<tr>
<td>Malaria films</td>
<td>Ideally 3 sets over 48 hours (practice varies)</td>
</tr>
<tr>
<td>Falciparum +/ - vivax antigen</td>
<td>&gt; 95% sensitive for PF</td>
</tr>
</tbody>
</table>

C. List 5 major complications of severe Plasmodium falciparum malaria.

- Haemolysis/anaemia
- Splenic enlargement/rupture
- Cerebral malaria – delirium, coma, seizures
- ARF
- Non-cardiogenic pulmonary oedema
- Hypoglycaemia
- Lactic acidosis

D. What are the two main choices for the urgent initial treatment of severe Plasmodium falciparum malaria?

1. Artesunate (2.4mg/kg IV) then oral
2. Quinine (20mg/kg IV) over 4 hours

62. A two month old infant has been brought in following a brief seizure. She has had coryzal symptoms and high fevers for two days. She has no relevant past history and no allergies. On examination: HR 110/min, BP 80/45 mmHg, Temp 39.7°C. There is no rash and no clear focus of infection but the child is ill-appearing and drowsy.

a. What investigations are required?

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCC (FBC)</td>
<td>Other inflammatory markers – CRP etc</td>
</tr>
<tr>
<td>Electrolytes</td>
<td>Sick child – possible abnormality of fluids in/out</td>
</tr>
<tr>
<td>Urine</td>
<td>Part of septic workup – especially as going to give</td>
</tr>
</tbody>
</table>
antibiotics  
CSF  
Part of septic workup. While this could be a "simple febrile convulsion" with another source of sepsis LP is mandatory in this setting. 

Blood culture  
Sepsis workup  
A lumbar puncture is performed:  
  CSF white cell count  
    Neutrophils 120 (nil)  
    Lymphocytes 25 (<5)  
  CSF red cell count 200  
  CSF Protein 1.2 (< 0.4 g/L)  
  CSF glucose 0.4 (> 2.5 mmol/L)  

b. Interpret these results.  

c. List and justify the medications you would use to treat this child.  

<table>
<thead>
<tr>
<th>Medication</th>
<th>Justification</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. A senior nurse complains to you that one of the junior doctors involved in this case has been caught stealing a box of ciprofloxacin. A formal incident report has been filed and the nurse wants you to “deal with the JMO”. The doctor says he only wanted to take some as prophylaxis against possible meningococcus. What key principles should you consider in your discussion with the JMO?
63. A 24 year old women who is 10 weeks pregnant presents with suspected pulmonary embolus.

a. List five clinical features that would increase her likelihood of having PE. (5 marks)

b. Describe the utility of the following investigations in this patient. (5 marks)

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 D Dimer</td>
<td>Can effectively exclude PE in low risk patients however more false positives in normal pregnancy (rises with gestation)</td>
</tr>
<tr>
<td>2 CXR</td>
<td>May provide alternative diagnosis - pneumonia, LVF</td>
</tr>
<tr>
<td>3 Lower limb US</td>
<td>If positive can avoid CTPA/VQ and radiation risks; negative scan cannot exclude PE</td>
</tr>
<tr>
<td>4 CTPA</td>
<td>High rates of nondiagnostic studies in pregnancy (35%) Cf. VQ. Increased lifetime risk of breast ca. Comparable radiation. Useful if CXR abnormal/underlying lung disease</td>
</tr>
<tr>
<td>5 VQ</td>
<td>First line imaging investigation. Low rates nondiagnostic VQ in pregnancy (4%). Not useful if CXR abnormal.</td>
</tr>
</tbody>
</table>

c. The patient has been diagnosed with pulmonary embolism. What are the ECG changes below? (1 mark)

| TWI V1 | IV, III, AVF |

d. What do the ECG changes suggest? (1 mark)

acute right ventricular strain/right ventricular dilation likely due to massive PE

e. The patient becomes hypotensive. List 4 treatment options (2 marks)

fluids, inotropes, thrombolysis, embolectomy
64. A 30 year old man presents with a left sided spontaneous pneumothorax.

a. What are 3 features to elicit on evaluation that will help determine your management? (3 marks)

b. Give a clinical circumstances in which each of the following would be appropriate. (3 marks)

<table>
<thead>
<tr>
<th>Management</th>
<th>Clinical circumstances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td></td>
</tr>
<tr>
<td>Intercostal catheter/</td>
<td></td>
</tr>
<tr>
<td>pneumocath/ pigtail catheter</td>
<td></td>
</tr>
</tbody>
</table>

c. List 6 complications of intercostal catheters. (3 marks)

65. A 5 year old girl is brought to the ED, with worsening asthma for the last 4 hours.

a. What are 4 clinical features of life threatening asthma? (4 marks)

b. On assessment she is unable to speak, has marked use of accessory muscles, RR 60 /min, Pulse rate 160/min and oxygen saturation of 89% on room air.

List your immediate management, including any drug doses. (4 marks)

c. Despite appropriate escalation of management the patient’s condition deteriorates over several hours and they are intubated in the ED. Give ventilation settings and justify. (6 marks)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Justify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tidal volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak inspiratory pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEEP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I:E ratio</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
d. After connecting to the ventilator the patient suddenly deteriorates becoming progressively hypotensive and tachycardic. Give three possible causes. (3 marks)

Answer (mandatory)
- Dynamic hyperinflation/gas trapping
- Tension pneumothorax
- Effect of induction agents
- Other (hypovolaemia, equipment failure - tube dislodgement/O2 not connected)

e. What is your first step in management? (1 mark)

66. A 42-year-old man is brought to your ED by ambulance with acute confusion. His wife states that he is previously well and on no medications, but his health has been deteriorating for three months, with tiredness and 10kg weight loss despite an enormous appetite. She also states that, on the bright side, he has become completely impervious to the cold and the extra money they’ve spent on groceries has been saved on heating bills.

Observations are:
A  intact
B  RR 40 /min, sats 100%, chest clear
C  HR 140 /min, BP 180/100 mmHg, CR 2 sec
D  E4(staring & bulging), V4 (agitated & aggressive), M5 (localising to pain), no focal neurology
E  Temp 38.5°C, BSL 10, vomiting, no rash or other signs

a. What is your provisional and differential diagnosis for this man’s clinical picture? (3 marks)

Provisional diagnosis:
Differential diagnosis:
- *Most likely thyroid storm*
- *But also other causes of confusion & high temperature e.g.*
  - Infection (meningoencephalitis, sepsis of any source)
  - Too much drug: e.g. salicylates, TCAs, anticholinergics, amphetamine/cocaine,
  - Too little drug: e.g. withdrawal of etoh/benzos, heat stroke, phaeochromocytoma)

b. What conditions may precipitate this clinical picture? (2 marks)

- Nasty precipitants eg acute MI, sepsis, trauma, IV contrast
- UnderDx/Rx TTX esp Graves
- Also XS thyroxine or too little antithyroid Rx

c. How will you treat him in the ED? (5 marks)
67. A 40-year-old female has been brought in following increasing confusion and agitation at home this morning. She has had no other symptoms. She is day 3 after normal vaginal delivery of a healthy baby at another hospital, but her antenatal history is unknown.

Ambulance officers report a generalised tonic-clonic seizure in the ambulance which required 5mg IV midazolam to terminate, followed by ongoing drowsiness and confusion. On arrival in the ED she begins to seize. ED staff and ambulance officers activate the ‘arrest call’ button and transfer her to the Resuscitation Room.

When you arrive she is being nursed on a bed and a provisional trainee is supporting her airway with jaw thrust. Her intravenous cannula has tissued.

On examination:
Airway: snoring / partly obstructed
RR 40 /min
O2 saturations 95%
HR 130 /min
BP 180/100 mmHg
Generalised tonic-clonic seizure
Afebrile

a. List the causes of seizure you would consider in this patient. (4 marks)

b. What is your initial management? (4 marks)
c. If you suspect eclampsia, what initial drugs/ dose/route/rate would you administer? (2 marks)

- Magnesium sulphate: officially 4G IV over 30 mins is RNS OG policy, but it comes in 10mmol amps. Closest is 20mmol (=5G). Safe enough to give over 20 mins provided you dilute it and watch the BP. Followed by IV infusion.

- Hydralazine: 5mg IV over 10 mins, can repeat.

68. You are the director of a tertiary ED which is a level one trauma centre. Recently the directors of trauma and haematology have both written to you regarding your department's haphazard use of blood products in the severely injured. You search your intranet and realise that you do not have a policy.

a. What are 3 triggers for massive transfusion? (3 marks)

- Massive Haemorrhage with shock or anaemia, ie Immediate need for uncrossmatched blood due to rapid haemorrhage and anaemia
- Blood loss exceeding 150 mL/min
- Need for at least 4 RBC units in the setting of uncontrolled bleeding
- Replacement of 50% of total blood volume within 3 hours (approx. 35mL/kg in an adult)
- Coagulopathy in the setting of blood transfusion

b. Name 4 physiological or biochemical parameters that should be measured early and often. (2 marks)

- Temperature;
- Acid–Base Status;
- Ionised Calcium;
- Haemoglobin;
- Platelet Count;
- PT/INR;
- APTT; and
- Fibrinogen Level.

c. What is the indication for Cryoprecipitate delivery? (2 marks)

Cryoprecipitate is used primarily as a source of fibrinogen (but also contains FVIII, VWF and FXIII). This is found in adequate amounts in FFP, and in dilutional coagulopathy FFP alone may be adequate. Coexisting DIC may increase fibrinogen requirements. Empirical use is unnecessary. Use should be guided by fibrinogen determinations.

d. What are the targets for Hb, Platelets and INR in massive transfusion? (3 marks)

- Hb>80g/L;
- Platelets >50x10^9/L; and
- PT and APTT<1.5 x control.

69. A 14 month old girl presents via ambulance to your tertiary ED. She was eating a sausage when she appeared to choke and turn blue. Parental back blows were given.

On arrival the child is drooling, has mild respiratory distress, is upset and has Sats of 96% on 6L O2,
a RR of 34 /min and a mild stridor.

A neck x-ray has been done and is shown below.

a. What is the major abnormality on the neck x-ray? (2 marks)

b. List and justify 3 options to managing her airway issue. (6 marks)

3. Delayed RSI/sedation in ED after getting help down to ED (eg anes/ENT etc etc)

C. What are 2 ways an unwitnessed bronchial foreign body aspiration may present in children. (2 marks)
70. A 27 year old woman is brought in by housemates to your tertiary ED. She had been not seen for 2 days and was found beside her bed slumped on the floor.

Her observations are:
GCS   13  
P    128 /min  
BP  95/50 mmHg  
T    34.7 °C  

a. What are the 3 most important abnormalities on the UELFT? (3 marks)

- Renal failure, rhabdomyolysis, hepatitis (?ischaemic)

Sodium   136 mmol/L  137-145  
Potassium  4.0 mmol/L  3.2-5.0  
Chloride   92 mmol/L  98-111  
Bicarbonate 23 mmol/L  22-31  
Urea       23.2 mmol/L  2.5-7.5  
Creatinine 424 μmol/L  60-110  
Est. of GFR 15 mls/min  >90  
Glucose    3.6 mmol/L  3.5-5.5  
Osmol-calc 292 mmol/L  280-300  
Bili Tot.   10 umol/L  2-20  
ALT        720 U/L  <55  
AST        15 U/L  5-50  
ALKP       89 U/L  20-110  
GGT        23 U/L  15-73  
CK        >103000 U/L  20-200  
CRP       1.2 U/L  <10  

b. List the principles of your fluid management. (4 marks)

ivf crystalloid eg NS, bolus to make restore BP systolic >100 then aim euvol aemic clinically. And then use iDC to guide UO, Aim at least 100ml/hr urine; consider frusemide/alkalisation to achieve this for rhabdo. Watch for signs volume overload.

c. List 6 differential diagnoses. (3 marks)

- drug overdose; head injury; hypoglycaemia, seizure, attempted suicide (eg asphyxiation), exacerbation established underlying renal disease; sepsis; SAH; ethanol abuse.

71. A 58 year old man with a PPM presents to your rural ED with palpitations intermittently for 8 hours.

His observations are:
P   60 /min  
BP  123/54 mmHg  
Sats 96 % RA
a. What is the ECG diagnosis? (2 marks)

b. List 4 possible causes. (4 marks)

c. Outline the major consideration of arranging his disposition. (4 marks)

72. A 58 year old Chinese Australian woman presents with fatigue. On examination she has a pulse of 95 /min, BP 100/45 mmHg and sats of 98% RA. She is afebrile. She appears deeply jaundiced.

Bloods are done and appear below

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBE. Hb</td>
<td>39</td>
</tr>
<tr>
<td>RCC</td>
<td>0.95</td>
</tr>
<tr>
<td>MCV</td>
<td>129</td>
</tr>
<tr>
<td>Retics</td>
<td>31.58%</td>
</tr>
<tr>
<td>WCC</td>
<td>5.4</td>
</tr>
<tr>
<td>Neut</td>
<td>4.26</td>
</tr>
<tr>
<td>UELFT Na</td>
<td>137</td>
</tr>
<tr>
<td>K</td>
<td>3.6</td>
</tr>
</tbody>
</table>
73. A 55 year old man comes into ED with a history of gastroenteritis for 4 days.

His ECG is shown below.
a. What is the most important abnormality? (1 mark)

b. List 3 important features to obtain from the history of presenting complaint. (2 marks)

- Medication history esp macrolides; antipsychotics; antihistamines, antiarrhythmics, antidepressants; diuretics
- History of known QTc congen
- Comorbid disease contributing eg thyroid dysfunction; IHD, myocarditis renal dis
- Extent of GI losses: dehydration etc
- Severity of illness: abdo pain, fevr; blood in stool

c. List the most likely cause in this context and then 2 alternate differentials. (2 marks)

- Likely hypo K (Mg or Ca);
- DDx drug use with impaired excretion eg ARF; medication interaction; overdose; congenital cause;
- Alcoholism (hypoMg);

74. A 25 year old man is brought into your regional ED after a bicycle accident. He is not moving his legs and has limited upper limb movement. He has a soft stridor.

His vitals are:
GCS 14
P 62 /min
BP 80/40 mmHg
Sats 95 % 10L O2

A CT neck is done as part of his assessment.

a. Describe the major abnormalities. (3 marks)

b. Outline your management of his airway and breathing. (7 marks)

75. You are the director of an urban district ED. Your short stay unit has been suffering with prolonged length of stays and high admission rates.

a. List 5 contributing factors to these issues. (5 marks)
b. Outline the key steps in improving the short stay unit’s length of stay and admission rates. (5 marks)

76. A 35 year old woman arrives after being brought in by friends due to her altered level of consciousness. Last seen 4 hours ago. They state she has been upset recently and has been commenced on 2 new medicines by her GP. Her GCS is 10, P 130 /min, BP 102/44 mmHg. She is Afebrile.

a. List 4 key ECG features you would look for on initial assessment and justify those. (4 marks)

b. List 3 key examination findings and relate these to differential diagnoses for her presentation. (3 marks)

c. List 5 key historical features you would ask her friends and justify. (3 marks)

77. A 55 year old woman is brought in with a GCS of 7. There is no sign of trauma. There is a history of ethanol abuse. P 105 /min, BP 100/40 mmHg, afebrile, Sats 98 2L NP, RR 34 /min.
a. What is the acid-base abnormality? (1 mark)

b. What are the 3 other significant findings? (1 mark)

c. What is the likely diagnosis (with justification) and what are 2 differentials? (3 marks)

d. Outline your major goals of management. (5 marks)
78. A 72 year old man comes in with change in facial appearance and mild headache.

a. What are the key clinical findings from this photo? (2 marks)

b. What is the likely diagnosis with justification? (2 marks)

c. What other findings would you search for on physical exam? (2 marks)

d. Outline your disposition and management plan (4 marks)

79. A 22 year old man presents having taken an overdose 2 hours ago. His family state he may have taken aspirin.

a. What clinical features might the patient have? (4 marks) (any of)
b. State 2 biochemical abnormalities that might be evident. (2 marks)


c. What are the indications for urinary alkalisation? (2 marks)


d. What patients can be discharged? (2 marks)

80. A 60 year old woman presents to ED with the primary complaint of being a ‘funny colour’.

Blood results reveal:

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilirubin</td>
<td>60</td>
<td>(1-20)</td>
</tr>
<tr>
<td>AST</td>
<td>400</td>
<td>(4-45)</td>
</tr>
<tr>
<td>ALT</td>
<td>200</td>
<td>(0-45)</td>
</tr>
<tr>
<td>GGT</td>
<td>125</td>
<td>(0-60)</td>
</tr>
<tr>
<td>Amylase</td>
<td>100</td>
<td>(25-136)</td>
</tr>
</tbody>
</table>

a. What is the predominate pattern of these blood results? (1 mark)

b. What are your 4 most likely differential diagnoses? (4 marks)
c. List 5 further investigations you would order in the ED to assist your diagnosis. Briefly justify each one. (5 marks)

FBC – look for haemolysis, bone marrow suppression (alcohol, tumour) (?retics, haemolytic screen) (would want conjugated vs unconjugated bili)

Serology – hepatitis A, B, C

Alcohol/paracetamol level or other drug levels – toxin induced transaminitis

?Albumin/coags – will identify degree of liver failure, chronic picture, won’t point to specific diagnosis

CXR – looking for primary malignancy

Hepatic USS – tumours, cirrhosis, (duct obstruction although not obstructive picture)

81. An 18 year old factory worker is rushed to ED having sustained a chemical burn to his eye. He thinks the chemical had ammonia in it. It is now 20 minutes since the accident.

His eye is pictured here.

a. Describe the picture. (3 marks)

There is marked clouding/opacification of the entire cornea, limbal ischaemia (must note), conjunctival haemorrhage, swelling, inflammation, inflammation of the eyelid tissues.

These features are consistent with a significant/severe alkali corneal chemical burn. (3 marks)

– Must include limbal ischaemia or whitening around cornea, conclude a severe or significant alkali burn.

b. What is your immediate management? (4 marks)

1. Copious Irrigation – water, normal saline, continuous, high volume, aim for pH <8 (may say 7.5) on litmus paper.

2. Analgesia – topical amethocaine or equiv, systemic titrated to pain score

3. Treat associated burns (skin, other eye)

4. Refer Ophthalmology given severity of burn

c. Name 3 things you would do to assess this injury, including prognostic indicators. (3 marks)

1. Hx – collateral history, confirm chemical involved – industrial alkali?

2. Exam – slit lamp – assess for limbal ischaemia (prognostic indicator), depth of burn
82. A 74 year old lady presents to ED with a history of being found on the floor at home confused.

Her arterial blood gas is shown below
Fl O2 = 6 litres O2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.29</td>
<td>(7.35 – 7.45)</td>
</tr>
<tr>
<td>pO2</td>
<td>80 mmHg</td>
<td>(35 – 45)</td>
</tr>
<tr>
<td>pCO2</td>
<td>64 mmHg</td>
<td>(90 – 100)</td>
</tr>
<tr>
<td>Bic</td>
<td>30 mmol/l</td>
<td></td>
</tr>
<tr>
<td>Base excess</td>
<td>+3</td>
<td></td>
</tr>
</tbody>
</table>

a. What do these blood results indicate? (Interpret these results) (3 marks)

Pt is acidaemic. Acute on chronic respiratory acidosis with partial/incomplete metabolic compensation (for full chronic expect HCO3:pCO2 ratio up 4:10, so PCO2 up by 20, bic should be up by 8 = 32.)

Type 2 respiratory failure as evidenced by raised pCO2 and relative hypoxia on 6 l O2.

b. Name 4 conditions you should consider in the differential diagnosis for the woman’s presentation. (4 marks)

1. Acute/infective exacerbation of COPD
2. Central cause – 1o ICH, TBI due to fall
3. Toxins – opioid or sedative overdose with respiratory depression
4. (?PE – on background COPD) or one of the below

There is a wide differential, eg hypoglycaemia, PE, pneumonia with sepsis, trauma to chest wall – difficult to mark!

c. List your immediate management priorities. (3 marks)

1. Remove high flow O2
2. Ensure patent/protected airway
3. Manage breathing and respiratory failure – bronchodilators, (steroids), n/p O2, BiPAP, aim for O2 sats 90% and aim to reduce hypercarbia, improved respiratory function
   C – treat associated or induced hypotension, dehydration, arrhythmias…
3. Treat associated injuries/conditions, eg. spinal immobilisation if appropriate.

(Plenty of management things but focus on the immediate). One suggestion was to consider ceiling of care, goals of care – would mention this before mentioning intubation)

83. A 25 year old previously fit and well man presents to the ED with chest pain following a tackle at rugby.

An ECG is attached.
a. Describe the ECG. (3 marks)

Sinus rhythm, rate 100 bpm, regular
Axis - RAD
pr interval normal
qrs complexes narrow
Large r wave in V1, low voltage and negative complexes V5-
6
Not pathognomonic for any particular pathology

b. What are 3 possible causes of the ECG appearance? (3 marks)

Given stem = trauma
1. Pneumothorax
2. Myocardial contusion (not high velocity trauma so less risk)
3. Lead misplacement – unusual axis, V1 and lateral lead appearance, or idiopathic

b. How would you further assess this patient? (4 marks)

Hx – severity of injury and mechanism, previous cardiac hx, prev pneumothorax, previous ECG
Exam – ABC stability (look for tension pneumothorax), tracheal deviation, chest sounds, hypotension, assess for C spine injury, secondary survey
Ix – Trauma series - CXR, C spine xray, (?pelvis), bedside USS for pneumothorax, pericardia effusion (4 marks) way too much for 4 marks! Must include something from each Hx/exam/Ix, some assessment of severity and Ix for pneumothora
84. A 1 year old presents to your ED with a history of a few days of fever and general unwellness. A picture of his hand is attached.

a. List 4 differential diagnoses for this patient. (4 marks)

   1. Kawasaki's disease
   2. Staph scalded skin syndrome or toxic shock, can be strep
   3. Drug induced - Stevens-Johnsons or similar
   4. Consider traumatic burn, neglect, (?NAI), although stem not suggestive

b. List 4 other features you would look for on examination to support your most likely diagnosis. (4 marks)

   1. (Elevated temperature?)
   2. Lymphadenopathy
   3. Conjunctivitis
   4. Mucous membrane involvement - Strawberry tongue, lip peeling
   5. Polymorphic rash (4 marks) – any of these acceptable, note the peeling is generally in convalescent so the rash and acute changes may not be present

c. List possible complications of this condition. (2 marks)

   vasculitis
   coronary artery aneurysms

85. A 50 year old man presents to ED unable to weight bear on his right leg after falling 4 metres off a ladder.
a. Describe the x-ray finding. (2 marks)

Lateral xray of posterior foot, single view. Displaced fracture through the body of the calcaneus with possible further comminution more posteriorly. Bohlers angle is reduced in keeping with the displacement of the posterior portion.

b. List 4 commonly associated injuries or complications of this injury. (4 marks)

1. Axial fractures - # hip, lumbar spine
2. # other calcaneus
3. Compartment syndrome
4. Non-union, malunion and long term disability

c. List your immediate management priorities in this patient. (4 marks)

1. Analgesia
2. elevation and non-weight-bearing, will need backslab
3. Treat other associated injuries, including spinal immobilisation if indicated (may be no.1?)
4. Consideration of operative management requiring admission under Orthopod (4 marks) Disposition may not be immediate Mx!

86. A 50 year old woman presents to ED with a 4 days history of malaise, intermittent fever, and the rash depicted here.
a. Describe this rash. (3 marks)

b. List 4 important examination findings that would be relevant in this case. (4 marks)

c. Name the 4 most relevant investigations that you would perform in the ED. (4 marks)
associated with chest discomfort. His GCS is 15 and BP 90/60 mmHg.

His ECG is attached.

a. What is the most likely diagnosis? (1 mark)

VT

b. What features on history and ECG are supportive of your diagnosis? (3 marks)

Hx – age over 35
ECG – regular broad complex tachycardia, assume VT as safest approach, see ARC
 guideline note below
Very high rate 200 bpm
‘Northwest axis’ +ve aVR, neg I, aVF
Brugada’s sign – onset QRS to nadir S >100ms seen in II
Josephson’s sign notching near nadir S wave
Not a RBBB or LBBB pattern

c. Name one algorithm or diagnostic criteria that you use clinically when interpreting an ECG such as this one. (1 mark)

A number of algorithms – Brugadas, ultra-simple Brugadas,...see LITFL VT page, great
reference

d. Briefly outline your immediate management priorities. (5 marks)

VT with pulse, unstable patient by AHA criteria (hypotensive, chest pain), treat as per ARC
or ILCOR guidelines

1. In resus, attention to airway, breathing, high flow pre-oxygenation

2. IV access for sedation – midazolam, judicious propofol, and volume CSL

3. Reversion strategy – DC shock sync 150 J biphasic, 200J mono (300 acceptable)

   Consider chemical reversion while preparing if patient stabilises – amiodarone 300mg IV over 20min, then infusion 900mg over 24hr, or second line if DC CV fails or arrhythmia recurs (not sotalol as hypotensive)

4. Treat cause – ischaemia, toxins (drugs), electrolyte abnormalities, myocarditis, HOCM, treat any complications

5. Supportive cares – volume replacement, optimise electrolytes (K, Mg)

6. (Disposition Coronary care) (5 marks) Lots to write

   Notes – Keep structure of Resus/Specific Care/Supportive Care/Treat cause/treat complications/disposition in the back of you mind.

   Want to keep statements broad so all areas covered eg. say reversion as stem then electrical vs chemical – more opportunity to show breadth of knowledge as expertise encompassing holistic care

   NB. For assessment questions always think something from each group – hx/exam/Ix.

   Note – Summary Recommendations ARC 2009

   Class A
   - Wide-QRS tachycardia should be presumed to be VT if the diagnosis is unclear. (Level of Evidence: C)
   - Direct current cardioversion with appropriate sedation is recommended at any point in the treatment cascade in patients with suspected sustained monomorphic VT with hemodynamic compromise. (Level of Evidence: IV)

   Class B
   - Intravenous amiodarone is reasonable in patients with sustained monomorphic VT that is haemodynamically unstable, refractory to conversion with countershock, or recurrent despite other agents. (Level of Evidence: IV)

88. A 35 year old woman presents to your ED with an acute asthmatic attack. She is on continuous salbutamol nebs, is highly distressed and only speaking single words.

   a. Name 4 features on history that increase the risk of severe life threatening asthma. (2 marks)

   1. previous life-threatening attack,
   2. previous intensive care admission with ventilation,
   3. requiring three or more classes of asthma medication,
   4. heavy use of β-agonists,
   5. repeated emergency department attendances in the last year and having required a course of oral corticosteroids within the previous 6 months.
   6. Behavioural and psychosocial factors have also been implicated in life-threatening asthma including non-compliance with treatment or follow up, obesity and psychiatric illness.

   Cameron 4 17th Ch 6.2

   a. List at least 6 therapeutic drug classes that may be used in the treatment of a severe attack. (2 marks)
b. Outline what your initial ventilator settings would be. (4 marks)

- Needs a safe approach.
- Need to mention permissive hypercapnia to be tolerated if necessary.

Lung protective Strategy
- Pressure or Volume control with attention to ensuring adequate minute ventilation.
- Tidal volume - maximum of 8ml/kg (6-8)
- RR – may need to be very low – start at 10 bpm, but be prepared to titrate down.
- I:E ratio – at least 1:3, may need to be 1:5. May need to adjust inspiratory time to achieve.
- FiO2 100%
- PEEP – controversial 0 or 5 mmHg (may have autopeep)
- Limits – Peak insp 35-40, plateau 35

C. What physiological targets are you aiming for? (2 marks)
- Pt heavily sedated
- Sats > 92%
- PaCO2 – tolerate PaCO2 up to 80 or higher if required.
- pH > 7.15
- normothermia

89. A 7 year old boy presents with acute respiratory distress. He is intubated in your department by a senior registrar as he has oxygen saturations of 84% on 15L oxygen via NRB mask and is tiring. You are called to the resuscitation room after intubation as his HR falls from 142/min to 70/min and oxygen saturations drop from 90% to 75% on 100% oxygen. He is attached to the Oxylog 3000 ventilator. The registrar reports a first pass intubation taking 40 seconds to complete.

a. List your top 6 differential diagnosis for this deterioration (6 marks)
b. Outline your approach to the airway in the order that you would perform. (4 marks)

90. A 70 year old man with type 2 diabetes presents to your ED with 24 hours of malaise. His initial observations are: HR 120 /min and BP 70/40 mmHg. His bedside BSL is 11.2 mmol/L and his central capillary refill is 5 seconds. He is confused and review of past notes indicates that this is new and he has a history of alcoholism.

a. What are the 3 most likely causes of this presentation? (3 marks)

b. What key initial investigations will you perform? (4 marks)

c. You perform a PR that shows heavy melena, the patient then has a large fresh haematemesis. List 4 initial management. (2 marks half a point for each)

91. This 24 year old female presented to the emergency department complaining of painful lumps and redness confined to her lower legs which had developed over the last two weeks.
a. List your main differential diagnosis with the most likely listed first. (5 marks)

- Erythema nodosum
- Cellulitis
- Contact dermatitis
- Insect bites
- Burns
- Erythema multiforme
- HSP
- Trauma
- Erythema induratum
- Well’s syndrome
- Panniculitis

b. List the most likely aetiologies for the most likely diagnosis. (5 marks)

92. A 17 year old male is brought to ED by ambulance, complaining of abdominal pain and vomiting. He appears confused and is unable to provide a good history. On examination his vitals are: Temp 37.9 °C, BP 100/50 mmHg, HR 110 /min.

Blood tests taken on arrival show:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value (mmol/l)</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na</td>
<td>140</td>
<td>(135-145)</td>
</tr>
<tr>
<td>K</td>
<td>5.0</td>
<td>(3.5-5.5)</td>
</tr>
<tr>
<td>Chloride</td>
<td>100</td>
<td>(95-110)</td>
</tr>
<tr>
<td>Creatinine</td>
<td>0.1</td>
<td>(0.03-0.08)</td>
</tr>
<tr>
<td>Urea</td>
<td>16</td>
<td>(3.0-8.3)</td>
</tr>
<tr>
<td>Glucose</td>
<td>40</td>
<td>(3.3-8.3)</td>
</tr>
<tr>
<td>Hb</td>
<td>167</td>
<td>(135-175)</td>
</tr>
<tr>
<td>PCV</td>
<td>50</td>
<td>(41-53)</td>
</tr>
<tr>
<td>Plt</td>
<td>224</td>
<td>(140-400)</td>
</tr>
</tbody>
</table>
WCC  21.8  (4-11)
Neutrophils  19.2  (4-11)

pH  7.133  (7.35-7.45)
pCO₂  24.8  (35-45)
pO₂  112  (90-100)
HCO₃  8.3  (24-32)
BE  -19.6
SaO₂  96.8  %

a. List the major abnormalities. (4 marks ½ for each)

b. What is the diagnosis? (1 mark)

c. What is your initial management? (5 marks)

93. A 30 year old man presents after 24 hours of vomiting. He looks sweaty and unwell.

Initial observations: Temp 37.2°C, HR 120 /min, BP 80/50 mmHg, RR 22 /min, SaO2 99% on room air.

Initial lab results:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>154 g/L</td>
<td>(110-165)</td>
</tr>
<tr>
<td>WCC</td>
<td>13.3 x10⁹/L</td>
<td>(3.5-11)</td>
</tr>
<tr>
<td>Plt</td>
<td>239 x10⁹/L</td>
<td>(140-400)</td>
</tr>
<tr>
<td>Na</td>
<td>130 mmol/L</td>
<td>(135-145)</td>
</tr>
<tr>
<td>K</td>
<td>5.2 mmol/L</td>
<td>(3.5-4.5)</td>
</tr>
<tr>
<td>Cl</td>
<td>101 mmol/L</td>
<td>(100-110)</td>
</tr>
<tr>
<td>HCO₃</td>
<td>21 mmol/L</td>
<td>(22-33)</td>
</tr>
<tr>
<td>Urea</td>
<td>10.7 mmol/L</td>
<td>(3-8)</td>
</tr>
<tr>
<td>Creat</td>
<td>94 umol/L</td>
<td>(50-100)</td>
</tr>
</tbody>
</table>
Ca (total) .39 mmol/L (2.15-2.6)
Alb 48 g/L (33-47)
Gluc 4.1 mmol/L (3-7.8)

a. What are the abnormalities? (2 marks)

b. List your differential diagnosis with most likely listed first. (7 marks)

94. A 55 year old man is referred to your ED by his GP with a complaint of being “generally unwell”. He has a history of hypertension.

The patients chemistry and venous blood gas are shown below:

<table>
<thead>
<tr>
<th>Na</th>
<th>144 mmol/L</th>
<th>(135-145)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>1.7 mmol/L</td>
<td>(3.3-4.9)</td>
</tr>
<tr>
<td>Cl</td>
<td>85 mmol/L</td>
<td>(98-106)</td>
</tr>
<tr>
<td>HC03</td>
<td>40 mmo/L</td>
<td>(3.0-8.0)</td>
</tr>
<tr>
<td>Creat</td>
<td>0.08 umol/L</td>
<td>(0.05-1.12)</td>
</tr>
<tr>
<td>pH</td>
<td>7.56</td>
<td>(7.35-7.45)</td>
</tr>
<tr>
<td>pCO₂</td>
<td>44 mmHg</td>
<td>(35-45)</td>
</tr>
<tr>
<td>pO₂</td>
<td>68 mmHg</td>
<td>(90-100)</td>
</tr>
</tbody>
</table>

a. Describe and summarise the results. (4 marks)
b. What is your differential diagnosis? (6 marks)

95. A 65 year old man with insulin dependent diabetes mellitus presents to the ED with a marked sudden decrease in vision.

a. What are your top 6 differential diagnoses? (3 marks)

b. What are the key historical features you would ask for to help differentiate between these? (7 marks)
96. A 60 year old female presents to ED with a painful red eye. There is no history of trauma.

a. What features on history and examination would you expect in acute closed angle glaucoma? (3 marks)

b. You diagnose acute closed angle glaucoma. Outline your management. (7 marks)

97. A 58 year old woman presents to the ED complaining of a five day history of sore throat and progressive difficulty swallowing. Examination reveals she is febrile with stridor at rest. Oropharyngeal examination does not reveal an overt diagnosis.

a. What is your differential diagnosis? (2 marks)

b. What are the key features in your immediate management? (8 marks)
97. A 74 year old female presents to ED with 2 hrs of left sided epistaxis. HR is 80 /min, all other vitals are within normal limits. She has been pinching the anterior nares tight for 20 minutes.

a. List 4 risk factors for epistaxis in this patient population. (2 marks)

Hypertension
Anticoagulants/antiplatelet
Atherosclerosis
Tumours
General: trauma, infection, nose picking, allergies, travel, low humidity

b. You examine the nose and the nostril is full of clotted blood, there is still active bleeding around this and the patient reports blood trickling down the back of their throat. Outline your approach. (6 marks)

Sit up in room with ENT equipment and good lighting
Ensure BP monitoring
IV access and check Hb and G+H
Personal PPE - mandatory
Nasal speculum to allow visualisation
Suction clots
Local anaesthesia spray with constrictor e.g. lignocaine and phenylephrine spray, or cocaine
Can try adrenaline soaked pledget with pressure if bleeding spot seen
Cautery (ring if active bleeding spot)
Disposition is discharge if treated ENT if packing or unable to obtain haemostasis

c. You are now able to examine the nose and there is still active bleeding but you are unable to see a bleeding point.

The patient’s vitals are HR 115 /min, BP 105/60 mmHg, SaO2 96% RA.

What methods are available to specifically treat this scenario? (2 marks)

Posterior packing: e.g rapid rhino or other device
Foley catheter if above unavailable/not working
Arterial ligation/embolisation if still bleeding and unstable

98. You have just intubated a 75 year old 60kg woman with deteriorating respiratory function after a fall causing isolated closed chest injuries. She has a history of COPD. She has become increasingly hypoxic and hypotensive since intubation. Your hospital does not have an intensive care unit.

a. List 8 causes for her deterioration (4 Marks)
b. Her hypotension resolves although she has an ongoing high oxygen requirement and high ventilator peak pressures. You have a simple VOLUME cycled ventilator.
List basic ventilator settings for this woman and outline your ventilation strategy. (4 Marks)

Lung protective ventilation. (1)
Avoid volutrauma (1)
Avoid barotrauma (0.5)
Accept permissive hypercapnoea. (0.5)
Use lowest FiO2 possible to avoid hypoxia. (0.25)
Rate 6-10 min (0.25)
TV 240-350mL (4-6mL/kg) (0.25)
PEEP 10cm H20 (or higher) (0.25)

c. This woman needs to be transferred to a tertiary hospital for ongoing management. A retrieval team will arrive in 2 hours to transfer her by fixed wing. You do not need to supply staff for the retrieval. Outline how you would prepare for this transfer. (2 marks)

Communicate with receiving team – where is she going who will be responsible? (0.5)
Prepare the patient – lines, medications, avoid pressure areas, ETT, catheter (0.5)
Prepare notes / xrays (0.5)
On-going monitoring and care of patient while awaiting retrieval team (0.5)

99. A 68 year old woman presents with central chest heaviness and nausea. An ECG is performed and is shown below.

Her vitals are:
BP 120/70 mmHg
PR 60 /min
RR 18 /min
SaO2 99 % RA
GCS 15
a. List the 4 most important features on this ECG. (2 marks)

b. List 3 arrhythmias associated with these ECG findings. (3 marks)

c. You are 3 hours away from the nearest cardiac catheter facility. Describe how this might change your management approach. (3 marks)

d. List 2 important management differences between an inferior ST-elevation myocardial infarction and an anterior ST-elevation myocardial infarction. (2 marks)

100. The mother of a child makes a complaint.

She states that three days previously, her 5 year old son had presented to the ED with elbow pain after a fall onto his outstretched hand.

Following x-rays, the treating doctor had “pulled on the elbow several times causing him to cry”. The doctor stated that he had suffered a “sprained elbow” and to return if the pain did not settle. The mother is distressed that her son had received no analgesia for the sprain and that he continued to not move the elbow because of pain. She also complained that the doctor spoke in a rude and insulting manner, and was very rough in his examination.

During your investigation, you find that the official report of the x-ray revealed a supracondylar fracture.

a. Describe 3 steps in dealing with this child’s second presentation.

b. List the 4 most important steps in dealing with the mother’s complaint.

c. Describe 3 strategies to mitigate the risk of this happening again.

d. List 3 key features which define a pulled elbow.

101. Your director wants you to write a set of guidelines for the use of physical restraints on a patient in the ED.
a. List 3 indications and three contraindications for patients under these guidelines.

b. Outline 4 mandatory observations that should occur during restraint.

c. Describe 3 circumstances under which you would remove the physical restraints.

d. List 3 legal frameworks under which physical restraint could occur.

102. A number of staff have been assaulted over the last 6 months in your ED.

a. List 5 key stakeholders to involve in discussions around this issue.

b. Outline 3 measures at triage to potentially decrease these assaults.

c. Outline 4 hospital-wide measures (i.e. non-emergency department specific) to potentially decrease these assaults.

d. List 4 factors which may have led to the increase in assaults.

103. You have been called to assist a junior doctor dealing with an upset family. The family is unhappy with the proposal of a “Do Not Resuscitate” (DNR) order for their elderly mother.

a. List 4 factors which would support the proposal of a DNR order.

b. Describe 3 specific methods for dealing with the upset family.

c. List 3 key pieces of advice you would give your junior doctor in dealing with this in future.
d. Assuming a DNR order was written up and a decision was made to palliate this patient, list 4 medications you would chart on the patient’s drug chart to assist this goal.

104. A 48 year old man presents with dizziness and palpitations. An ECG is performed and is shown below.

The patient’s vitals are:
BP 100/60 mmHg
RR 18 /min
GCS 15

a. What is the diagnosis? (1 mark)

b. List 3 features on this ECG which supports your diagnosis. (3 marks)

c. The patient’s BP drops to 70/40 mmHg and he becomes confused. Describe your 2 most important management priorities at this time. (4 marks)

d. Is implantable defibrillator an option in this patient? Justify your answer. (2 marks)

105. This 77 year old man presents with chest pain and dizziness on the background of Type II diabetes mellitus and a permanent pacemaker (PPM) for a sick sinus syndrome 3 years earlier. A recent PPM check was normal.

An ECG is performed and is shown below.
a. List 2 important abnormalities on this ECG. (2 marks)

b. What is the likely pacing mode shown in this ECG? (1 mark)

c. List 3 common pacing modes in use in Australia and the common clinical circumstances they are used in. (3 marks)

d. Describe your immediate management priorities in this patient. (4 marks)

106. A 48 year old haemodialysis patient presents to ED complaining of muscle weakness and nausea.

Vital signs are:
Temp 37.2 °C
BP 100/50 mmHg
RR 20 /min
Sa02 94 % on air
GCS 15
Weight 76 kg

The following ECG is performed:

[ECG image]

a. What is the key diagnostic feature of this ECG?

b. List 5 potential causes of this condition in this patient.

c. List 6 treatments for this condition in this patient.

107. An 18 year old male presents the ED having a severe asthma attack. He is on high flow oxygen and receiving nebulised salbutamol.

His vitals are as follows:
HR 140 /min
BP 110/60 mmHg
RR 32 /min
GCS 13/15

An ABG is taken.
pH  7.10  (7.35-7.45)
pO2  54    mmHg  (90-10)
PCO2 120   mHg   (35-45)
HCO3 18    (24-32)
BXS  -5
Lactate 4

a. List 4 abnormalities on this ABG. (2 marks)

b. Give the names, routes and doses of 6 medications you would treat this man with. (3 marks)

c. List 4 complications of RSI/ intubating this man. (2 marks)

d. Describe your ventilator settings in a patient with acute asthma. (3 marks)

108. A 55 year old man is brought to the ED after being found collapsed at home. He has a medication alert bracelet indicating he has type 1 diabetes.

His observations are:
GCS  12
BP  90/60    mmHg
HR  130  /min
RR  30    /min
Temp 38  °C

A photograph of the patient’s left thigh is taken and is shown below.
109. A 46 year old man is brought to your ED by ambulance following an overdose of unknown medications. He has had a brief generalized seizure en route.

On arrival his observations are:

- GCS: 12
- BP: 85/60 mmHg
- Temp: 37.0 °C
- O₂ Sat: 100 % on 8 L/min O₂

His ECG is shown below:
a. Describe the ECG. (5 marks)

b. What are the first 5 things you would do to manage the patient? (5 marks)

110. An elderly man collapses and is unresponsive at a shopping centre.

a. What are the 4 elements in the chain of survival that improve the probability of survival? (2 marks)

He receives prompt BLS from bystanders, then defibrillation from an AED prior to the arrival of the ambulance 10 minutes post-arrest. He is found to be in VF and does not revert with defibrillation by the ambulance crew. He is transported to ED, where he is still pulseless and the monitor shows this rhythm.

b. What are your immediate actions? (8 marks)

111. Old Format SAQs
a. Discuss the investigations for a suspected pulmonary embolus in a 24 year old woman who is 10 weeks pregnant. (100%) (2010.1)

b. A 24 year old woman presents with a left sided spontaneous pneumothorax. Discuss the treatment options for her pneumothorax (100%) (2011.2)

112. A 48 year old man is brought by ambulance to your tertiary ED following a collapse at home. GCS on arrival is 3. He is immediately intubated and ventilated before CT scanning of his head and neck. CT reveals a massive intraparenchymal haemorrhage with obstructive hydrocephalus. The neck CT scan is normal. He was previously well on no medication. His partner is present and requests information about his treatment and prognosis.

His observations are:
HR  60 /min
BP  180/110 mmHg
O2 sats  100 %
Temp  36.3 °C

Old Format Question
Describe your management (100%)

New Format questions
a. What are your management priorities?

b. List and justify 4 other investigations you would perform.

c. Describe 5 urgent interventions you would perform.

d. What are the principles for gaining consent for organ donation?

113. You work in a rural ed with only basic specialties represented. An 80 year old man is delivered to your ED with an acute anterior ST elevation MI. He developed central chest pain 2 hours ago, which is ongoing. He is anxious, pale and diaphoretic. Widespread crepitation can be heard throughout his lung fields. Your local helicopter is out on another job and you have no alternative retrieval options for at least 4 hours.
His observations are:
GCS 15
HR 100 /min
BP 190/105 mmHg
RR 24 /min
O2 sats 91 %
Temp 36.8 °C

Old Format Questions
A. Outline your treatment. (70%)

b. List absolute and relative contraindications to fibrinolytic treatment in patients with acute MI.

New Format Questions
a. What are your treatment priorities?

b. List absolute and relative contraindications to lysis. (as above)

c. Despite your treatment, the patient drops their GCS to 7. List 5 reasons that may explain this deterioration.

d. You elect to intubate this patient. Outline your drug options for induction.

114. A baby is born in your resuscitation room after a precipitous birth from a 32 week pregnant woman. The baby is not breathing and there is thick meconium stained liquor on the bed. The delivery is otherwise uneventful and the mother requires no acute medical treatment. There is no on-site neonatal or obstetric service.

Old Format question
a. Describe your management. (100%)

New Format Question
a. List seven essential equipment items that should be available for resuscitation of a neonate.
b. List the immediate complications of this preterm labour.

c. Describe the main differences between the adult and neonatal airway.

d. List the management priorities for this child for the first 5 minutes.

e. What preparations do you need to make prior to transfer to definitive care?
EMQ 1

<table>
<thead>
<tr>
<th>a) Adrenaline</th>
<th>e) Milronone</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Dobutamine</td>
<td>f) Noradrenaline</td>
</tr>
<tr>
<td>c) Dopamine</td>
<td>g) Vasopressin</td>
</tr>
<tr>
<td>d) Levosimendan</td>
<td></td>
</tr>
</tbody>
</table>

For each pharmacological effect below chose the corresponding drug from the list above.

1. It is a phosphodiesterase III inhibitor

2. It is a non adrenergic peripheral vasoconstrictor

3. It has a potent alpha agonist with significant action at beta 1 receptors and a relative absence of beta 2 effects

4. It is indicated in the treatment of anaphylaxis

EMQ 2

<table>
<thead>
<tr>
<th>a) 0.1-0.2 mmol/kg</th>
<th>f) 5 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) 1 mmol/kg</td>
<td>g) 5 mcg/kg</td>
</tr>
<tr>
<td>c) 1 mg/kg</td>
<td>h) 10 mcg/kg</td>
</tr>
<tr>
<td>d) 2 J/kg</td>
<td>i) 20 mcg/kg</td>
</tr>
<tr>
<td>e) 4 J/Kg</td>
<td></td>
</tr>
</tbody>
</table>

Regarding paediatric cardiac arrest match the correct dosing schedule.

1. Adrenaline

2. Magnesium

3. Amiodarone

4. Defibrillation
5. Atropine

6. Bicarbonate

EMQ 3

<table>
<thead>
<tr>
<th>a) Adrenaline</th>
<th>b) Atropine</th>
<th>c) Amiodarone</th>
<th>d) Bicarbonate</th>
<th>e) Bretylium</th>
<th>f) Calcium</th>
<th>g) Crystalloids</th>
<th>h) Lignocaine</th>
<th>i) Magnesium</th>
<th>j) Potassium</th>
<th>k) Lignocaine</th>
</tr>
</thead>
</table>

In each of the situations below choose the drug which is most appropriate in that setting.

1. A 23 year old man with a history of depression presents via ambulance with a GCS of 10, has a generalised tonic clonic seizure followed by brief VF arrest. They have return of circulation after one DC shock. This was the initial ECG.

2. A 72 year old woman presents to resus via ambulance having arrested during offload. She has known ischaemic heart disease but is otherwise well. The ambulance was called for a complaint of chest pain. CPR has been commenced and a single shock has been given.
3. A 1 week old baby presents to resus in extremis with poor perfusion, tachypnoea with recessions. The baby has a prolonged apnoea and you decide to intubate. Post successful intubation the heart rate drops to 50, there is still a palpable pulse

4. A 64 year old is in VF arrest, they have had 2 shocks and one dose of adrenaline. You are preparing to give the 3rd shock.

EMQ 4

<table>
<thead>
<tr>
<th></th>
<th>a) 0.05-0.15 mg/kg</th>
<th>b) 0.3 mg/kg</th>
<th>c) 1 mg/kg</th>
<th>d) 2 mg/kg</th>
<th>e) 3-4 mg/kg</th>
<th>f) 5 mg/kg</th>
<th>g) 0.5 mcg/kg</th>
<th>h) 1.5 mcg/kg</th>
<th>i) 5 mcg/kg</th>
<th>j) 10 mg/kg</th>
</tr>
</thead>
</table>

Match the best dose (or range) with each scenario

1. Propofol initial dose for procedural sedation for young adult requiring relocation of an elbow
2. Intranasal fentanyl initial dose for analgesia in a child
3. Ketamine IM dose for procedural sedation in a child
4. Midazolam IV dose for anxiolysis and amnesia during a minimally painful procedure

EMQ 5

<table>
<thead>
<tr>
<th></th>
<th>a) Bladder lavage</th>
<th>b) Cardiac bypass</th>
<th>c) Forced hot air blanket</th>
<th>d) Gastric lavage</th>
<th>e) Peritoneal lavage</th>
<th>f) Thoracic lavage</th>
<th>g) Warm blanket and removal of wet clothing</th>
<th>h) Warmed IV fluids</th>
</tr>
</thead>
</table>

Which single rewarming technique from the list is the most appropriate for the given scenario? All patients have been retrieved to your tertiary ED.

1. A 20 year old university student has consumed 6 beers and has decided to paddle to a nearby island on a lilo. He missed the island and was picked up by a rescue helicopter. Immersion time 60 minutes. Temperature on arrival 35C shivering vigorously.

2. A 34 year old woman was ice skating on a frozen lake in the South Island. She fell through the ice. She was recovered after 30 minutes of submersion. CPR commenced immediately. Temperature 19C. She is asystollic

3. A 58 year old man has overdosed on quetiapine in the bush. He has been in the open for 12 hours. Haemodynamics normal. Drowsy but following commands. Temperature 33C. Not shivering.

EMQ 6
| a) PO Chloral hydrate | f) Inhaled Nitrous oxide |
| b) Intranasal Fentanyl | g) IV Propofol with IV Fentanyl |
| c) IV Ketamine | h) IV Propofol |
| d) IV Midazolam | i) IV Thiopentone |
| e) Intranasal Midazolam | j) IV Propofol with nitrous oxide |

You are a staff specialist working in a well-staffed tertiary Australasian ED. Choose the best option from the list for each of the following scenarios.

a. Sedation of a 3 year old child with a displaced distal radius greenstick fracture requiring reduction.

2. Sedation of an otherwise well haemodynamically stable 45 year old man requiring DC cardioversion for atrial fibrillation.

3. Sedation for a cooperative 15 year old boy during a lumbar puncture.

**EMQ 7**

| a) Bendrofluazide | f) Labetalol |
| b) Cilazapril | g) Metoprolol |
| c) Doxazosin | h) Midazolam |
| d) Frusemide | i) MgSO4 |
| e) GTN | j) Nifedipine |

1. A 48 year old man presents with confusion and is found to be hypertensive 260/130 mmHg. What is the most appropriate agent?

2. A 76 year old woman presents with severe breathlessness and bilateral crepitations at 0500h. Her blood pressure is 210/110 mmHg. What is the most appropriate agent?

3. An agitated 21 year old man with needle tracts on his forearms presents with a blood pressure of 200/100 mmHg. What is the most appropriate agent?

4. A 29 year old woman who is 39/40 pregnant presents with headache, abdominal pain, swollen ankles and altered vision. Her blood pressure is 210/120mmHg. What is the best agent?

5. A 20 year old woman is 29/40 pregnant and presents in labour. Her blood pressure is 130/90. What is the best agent?

**EMQ 8**

| a) Anterior AMI | f) Posterior AMI |
| b) Inferior AMI | g) Lateral ischaemia |
| c) High lateral AMI | h) Pericarditis |
| d) Left main coronary stenosis | |
| e) LBBB AMI |

Consider 4 previously well middle aged men presenting with severe central chest pain. Each has an ECG taken. Select the most likely diagnosis for each of the following ECGs.
1. This ECG is most consistent with

2. This ECG is most consistent with

h.
3. This ECG is most consistent with

4. This ECG is most consistent with