Fellowship exam practice paper 8 answers (POWH 2015)

SAQ 1 Answer

a)

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 V2-3)*
- *Bradycardia*

b. *Main priority revascularisation - angioplasty / thrombolysis - 1 Mark*

Cautious fluid bolus -must acknowledge risk of pulm odema or use bolus <500ml - 1 Mark
1 Mark each for any two of:
- *Atropine - likely to be inefffective*
- *Avoid / cease GTN*
- *Transcutaneous pacing*
- *Inotropes as listed below only*
- *IABP - only acceptable if preceded by revascularisation*

c.

	Agent	Dose
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*

1/2 Mark for each correctly completed box.
Taken from Tintinalli's Emergency Medicine 7th Edition Chapter 54 Table 54-5 Pg 388 with Milrinone excluded.
Consistent with management advice in Dunn Emergency Medicine Manual 5th Edition Vol 1 Chpt 28 Pg 440

SAQ 2 Answer

A 5 week old boy is brought in by his parents due to 3 days of vomiting. Following a test feed, you make the diagnosis of pyloric stenosis. Here are the results of his blood test:

Na 128 mmol/L, K 2.9mmol/L HCO3 35 mmol/L, Cl 2.8 mmol/L,
pH 7.63, BE +10mmol/L

a. For pyloric stenosis what clinical features do you look for in your assessment? (2 marks) *any 4 of the following:*

Age group – typically 6 weeks (corrected for prem babies). Range is 2-12 weeks
Increasing vomiting – non bilious, increasing force, volume and frequency
History of wanting to feed straight after vomiting and "worried man" look due to starvation.
Loss of weight is a feature, part of " failure to thrive"
Stool change to starvation stool – hard, green, mucose like
On examination – failure to thrive look – weight loss, loss of buttocks
Sometimes – see the pyloric wave

b. Interpret the above results (6 marks)

Abnormality	Cause
Na 128	Due to:
K 2.9	
HCO_3 35	
CL	
pH	
Base excess	

Electrolyte abnormality

- *Alkalosis due to combined effects of depleted hydrogen ion, chloride and potassium from expulsion of gastric content due to repeated vomiting*
    - *Alkalosis converts to acidosis if dehydration is severe*
- *Potassium depletion*
    - *Significant hypokalaemia due to gastric mucosal loss*
    - *Distal tubular loss of potassium due to renal hydrogen ion conservation*
    - *Intracellular potassium depletion contributes to the alkalosis by forcing hydrogen ion into the cell*
    - *Severe depletion of intracellular potassium forces hydrogen exchange for sodium in the distal tubule producing a paradoxical acid urine despite the alkalosis*

    - *Restoring potassium is necessary to correct the alkalosis*
- *Chloride depleted*
    - *Chloride may be normal or as low as 70 mEq/L*
    - *Restoring chloride is necessary to correct the alkalosis*
- *Sodium*
    - *Renal conservation of sodium requires equivalent HCO3 or chloride absorption*
    - *Large renal sodium losses occur when both serum HCO3 and serum chloride are low*
    - *Sodium deficit may be unmasked by rehydration*

c. List your management steps? (2 marks) *½ mark for each of the following, doesn't have to give full explanations.*

Rehydration: 5% dextrose and N saline – add 50 ml of 50% dextrose to 450ml of Nsaline

Add K 30-50mmol/L once urine output is established.
Correction of hypoK will help correct the alkalosis because it releases intracellular Hydrogen

Gastric decompression by NG tube is not used pre-op as it worsens the electrolyte loss (some units don't use NG tube pre-op)

Definitive surgery – Ramstedt procedure. Must correct electrolyte, acid base and fluid abnormalities prior to surgery

SAQ 3 Answer

1. Up to 2 marks, per element from this list

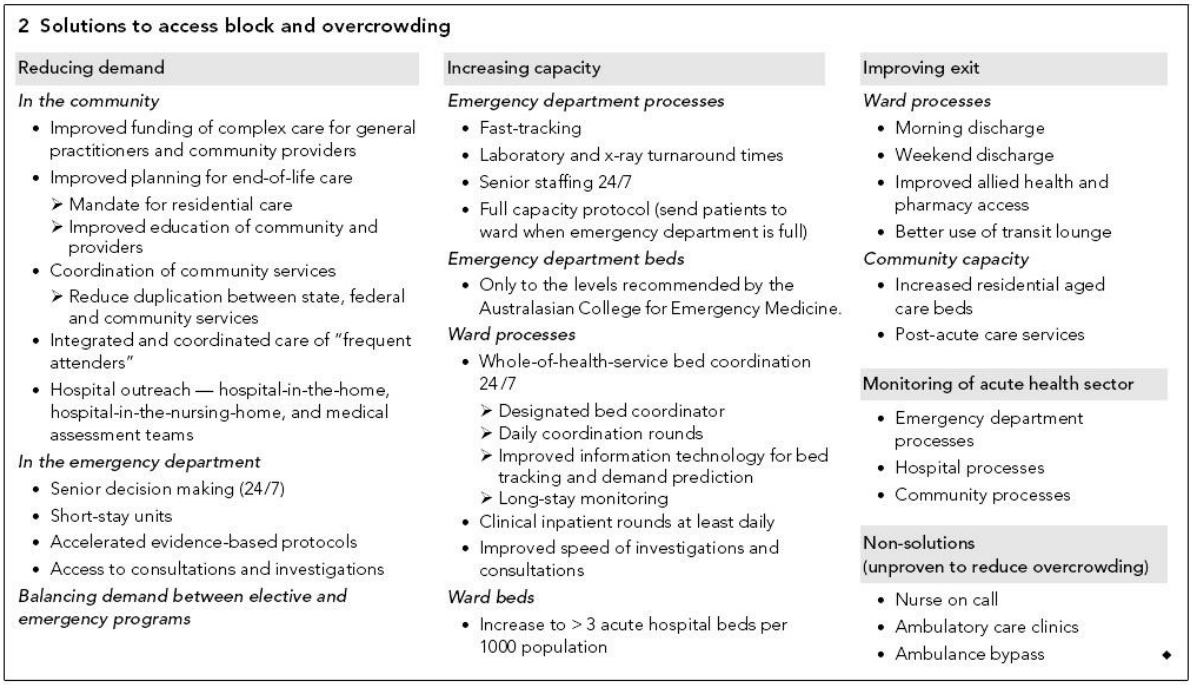
a) *admitted patients in the ED*
b) *Exceeding specified time limits (8 hrs as per ACEM terminology)*
c) *1 Mark for recognising proportion / percentage of patients who do not reaching in-patient bed*
d) *1 Mark for accurate time frame of exceeding 8 hours*

2. Up to 2 marks for elements from the list.

a) *That by 2015, 90% , currently 70-80 %*
b) *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.

3)



2 Solutions to access block and overcrowding

Reducing demand

In the community

- Improved funding of complex care for general practitioners and community providers
- Improved planning for end-of-life care
  - ➢ Mandate for residential care
  - ➢ Improved education of community and providers
- Coordination of community services
  - ➢ Reduce duplication between state, federal and community services
- Integrated and coordinated care of "frequent attenders"
- Hospital outreach — hospital-in-the-home, hospital-in-the-nursing-home, and medical assessment teams

In the emergency department

- Senior decision making (24/7)
- Short-stay units
- Accelerated evidence-based protocols
- Access to consultations and investigations

Balancing demand between elective and emergency programs

Increasing capacity

Emergency department processes

- Fast-tracking
- Laboratory and x-ray turnaround times
- Senior staffing 24/7
- Full capacity protocol (send patients to ward when emergency department is full)

Emergency department beds

- Only to the levels recommended by the Australasian College for Emergency Medicine.

Ward processes

- Whole-of-health-service bed coordination 24/7
  - ➢ Designated bed coordinator
  - ➢ Daily coordination rounds
  - ➢ Improved information technology for bed tracking and demand prediction
  - ➢ Long-stay monitoring
- Clinical inpatient rounds at least daily
- Improved speed of investigations and consultations

Ward beds

- Increase to > 3 acute hospital beds per 1000 population

Improving exit

Ward processes

- Morning discharge
- Weekend discharge
- Improved allied health and pharmacy access
- Better use of transit lounge

Community capacity

- Increased residential aged care beds
- Post-acute care services

Monitoring of acute health sector

- Emergency department processes
- Hospital processes
- Community processes

Non-solutions (unproven to reduce overcrowding)

- Nurse on call
- Ambulatory care clinics
- Ambulance bypass

1 Mark per entry to maximum of 6 marks- a maximum of 3 marks can be given for Emergency Department specific strategies i.e. for full marks must include minimum of 3 hospital or community based strategies. Table taken from Cameron PA, Joseph AP, McCarthy SM. Access block can be managed. MJA 190;7:364-368. April 2009.

SAQ 4 Answers

A 50 year with known renal stones presents to the ED, with 3 day history of generally unwell, back pain and rigors. He is febrile at 39, has BP of 80/60 and PR or 130 /min. He has had 1 litre of Hartmans with the Ambulance service

1. Normal Saline – Sodium 154 mmol,CL 154, K+ 0, Ca++ 0

Hartmann's – Sodium 131mmol, Chloride 111mmol, K+ 5mmol, Ca++ 2 mmol, Lactate 29mmol

Not sure I would want to hear colloid but I suppose acceptable?

2. Any 4 from the following -

Physiological – SBP 90, MAP > 65mmHg, HR <100

Perfusion – UOP > 0.5ml/kg/hour, Lactate <2mmol, resolving base deficit, Cap refill < 4s

Invasive measurement – CI >2.5 L/min/m2, PAOP > 15 mmHg.

3. Clinical, JVP, and Vital signs PR and BP. (+/- invasive monitoring, Urine output

Ulrasound IVC compression

4. Any 4 from the following -

Hypothermia after large volumes of fluid therapy

Coagulopathy due to dilution

Tissue oedema – limb and abdominal compartment syndrome

Pulmonary oedema

Hyperchloraemic acidosis with NS

Anaphylaxis to synthetic colloids /blood transfusion

SAQ 5 Answer

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 possible causes for this ECG (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

SAQ 6 and 7 Answer share the same stem

A 4 week old baby is brought to your ED in a rural hospital by her mother. She has been feeding poorly for the last 24 hours. While mum is talking to you, the baby has an episode of apnoea.

1. The baby has another 2 episodes within 10 mins. You decide to intubate her.

List the structural features that distinguishes a neonatal airway from an adult airway? (5 marks) *any 5 of the following:*

Small nasal passages

Small mouth with relatively large tongue

Friable mucosa

Relatively larger and longer epiglottis

Funnel shaped larynx with narrowest point below the vocal cords

Shorter trachea

More anterior trachea

2. A CTB was obtained. List the important features and implications. (5 marks)

Midline shift

Effacement of the right lateral ventricle

Right subdural haematoma

Extensive acute bleeding from frontal to parietal area

Fresh bleeding into the sulci of the right frontal lobe

Loss of grey white differentiation

NB – widening of the coronal suture on the right side compared to left

Summary: implication of significant raised intracranial pressure

SAQ 7 Answer

The blood results of the neonate described above returns.

Here are the blood results :

WBC of 20.6 X 10^9/L,

Hemoglobin (Hb) 89 g/L,

Platelets 516 X 10^9/L

Prothrombin time (PT) >50 s

Activated partial thromboplastin time (aPTT) = 90.6 s.

1. What is your interpretation of these results? (2 marks)

Abnormalities in the PT and APTT

Suggestive of underlying coagulopathy – hence less likely for findings to be secondary to non-accidental injury

Anaemia – in neonates, ICH may be significant enough to cause anaemia

2. You are in a rural hospital. List the steps in your management of this baby. (8 marks)

Supportive treatment	Specific treatment	Disposition
Maintenance fluid	Definitive airway and ventilation due to decreased level of consciousness and need to protect the airway	Neonatal retrieval
Prevent hypoglycaemia	Measures to reduce raised ICP and prevent secondary brain injury	TO paediatric neurosurgeon and neonatologist and ICU (NB NICU is unlikely to take patient, will be paediatric ICU)
Consider RBC transfusion	Elevation of head, ventilation measures, use of osmotic diuresis (mannitol)	
Keep normothermic	Early referral to neurosurgery for definitive management	
Social worker – supportive care for the family	Early referral to NICU for management till definitive surgery	

SAQ 8.

A 34 year old woman at 32 weeks gestation presents due to severe vomiting over 2 days. She admits to taking a large amount of alcohol prior to the vomiting. She says she normally drinks alcohol on a daily basis and has done so for a long time. She has not been able to eat or drink alcohol for the last 2 days

Na	132mmol/L	(132-144)	pH	7.17	(7.35-7.45)
K	4.8	(3.5-4.5)	pCO2	14mmHg	(35-45)
Cl	102	(98-108)	pO2	114	(80-110)
HCO_3	7	(23-33)	lactate	3.0	
Cr	0.13	(0.06-0.12)	Urine Glucose	negative	
Urea	4.9	(3.0-8.0)	Urine ketones	positive	

1. What are the differential diagnoses? (2 marks)

Diagnosis	Reasons supporting diagnosis
1. Alcoholic ketoacidosis	No glucosuria, + ketones, acidosis
2. Diabetic KA	+ketones and acidosis

2. How do you interpret her ABG? (2 marks)
   High anion gap metabolic acidosis
   Partially compensated
   Very low HCO3 – no renal compensation (yet)

3. What is management is required for her condition? (6 marks)

Supportive treatment	Specific treatment	Disposition
Look for intercurrent illness	IV rehydration	Admit for rehydration and other specific treatment
Obstetric assessment of baby	Glucose/provide substrate	
	Treat underlying large ETOH intake/withdrawal	

SAQ 9 Answers

1) List 4 indications for endotracheal intubation (4 marks)

To create and airway

To maintain an airway

To protect an airway

To provide for mechanical ventilation

From Cameron, Textbook Adult Emergency Medicine 2009, p 20

2) Move to resus bed.

   Ensure Airway adjuncts in place, oropharangyeal, and NP times 2

   Ensure BVM 2 person done with good seal

   Check for clinical signs of pneumothorax

   Prepare for immediate Endotracheal Intubation

3) A clearly stated Advanced Directive that he did not want invasive airway

   He responded rapidly to your immediate airway and breathing management

   You have no equipment or expertise to perform the procedure

SAQ 10 Answer

A 67 year old male was 6 weeks post an inferior myocardial infarction. He presents to ED with 'light headedness' worse on exertion

He has been started on a 'whole lot' of new medications since his heart attack and feels they may not be helping.

Vital signs are:

Temp 37.0 ^{0}C

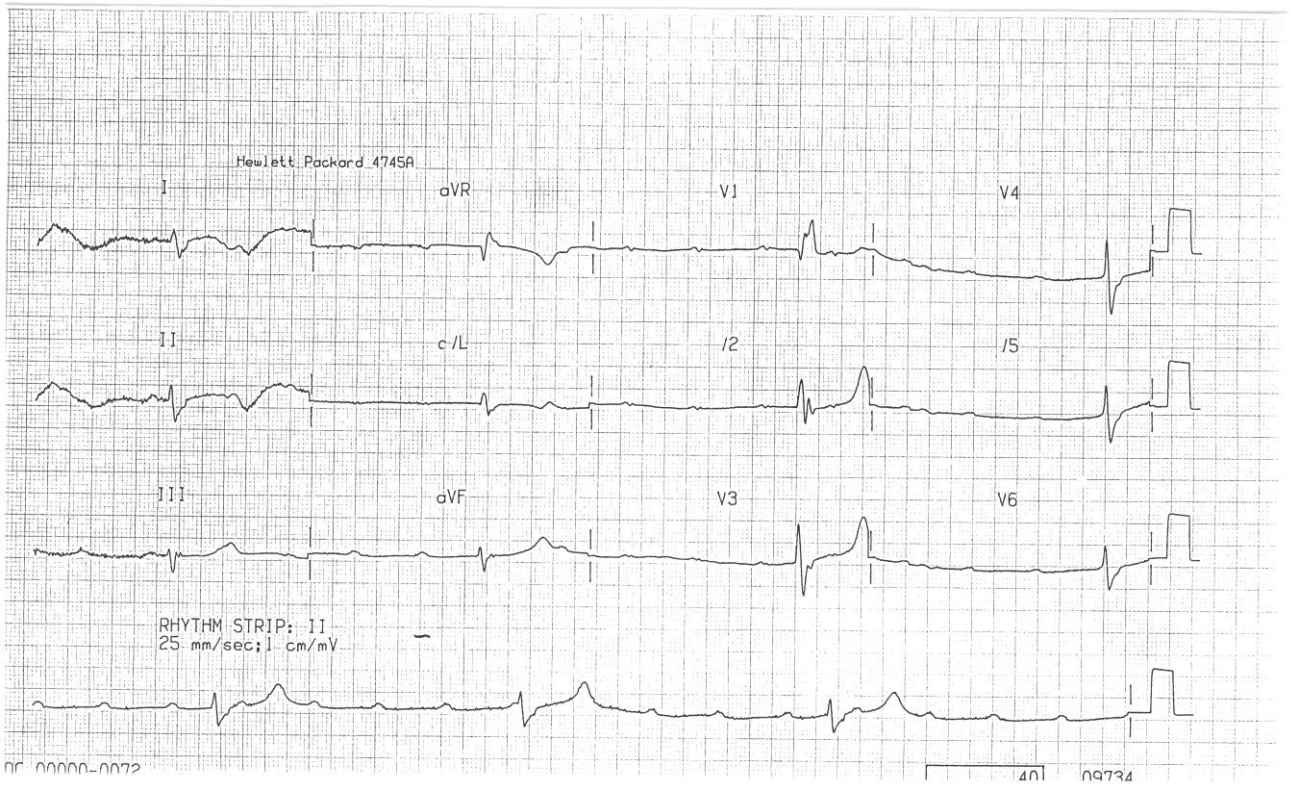
BP 100/55 mmHg

RR 16/min

$Sa0_2$ 97% on air

GCS 15

The following ECG is performed:



a) Outline 4 important features of his ECG (2 marks)

Bradycardia
No connection between P waves and QRS
Complete AV dissociation – Complete Heart Block

b) Outline you interpretation (2 marks)

Complete heart block with hypotension. Hence haemodynamically compromised. Will need definitive treatment.

c) Outline treatment options (6 marks)

Stabilize haemodynamic instability: support circulation through increasing the rate, correct hypovolaemia if present, may need inotropes to support the pump

Look for underlying cause and treat it if able in the ED: ischaemia, secondary to medications – look through list of medications and doses

Will need admission for definitive care - monitoring, reviewing medications, look for recurrent ischaemia etc

SAQ 11 Answers

A 48 year old haemodialysis patient is brought down to the ED as he was complaining of shortness of breath, muscle weakness and nausea while booking in for his 2 weekly dialysis. An ECG was done.

Vital signs are:

Temp 37.2 deg c

BP 100/50 mmHg

RR 20/min

$Sa0_2$ 94% on air

GCS 15

Weight 76kg

a. Missed dialysis,

drugs (k^+ supplements/sparing diuretics,digoxin

rhabdomyolysis, immobility

hyperthermia, environmental

GI tract bleeding

c. CaCL 10% 5mls +/-repeat

Salbutamol nebulized repeat hourly if required

NaHCO3 1meg/kg

Glucose/insulin (50ml of 50% /IV 10IU)

Haemodialysis

Digoxin antibodies if on dig

SAQ 12Answers

A 14 year old woman is brought in by ambulance distressed and combative. She tells the nurse she has been sexually assaulted by a male relative but doesn't want to involve the police or her family to be informed.

1. 1) List four potential medical complications (other than HIV) of sexual assault and any prophylactic treatments available that you will need to discuss with her. (4 marks)

Medical complications of sexual assault	Prophylactic treatment

STIs - antibiotics - for trichomoniasis (metronidazole), chlamydia (azithromycin or doxycycline), gonorrhoea

Pregnancy - morning after pill
Hepatitis vaccination status - immunoglobulin +/- vaccination
HIV - post exposure prophylaxsis regime
tetanus vaccination booster for injury

2. List three factors you would take into consideration when considering HIV post-exposure prophylaxsis.(3 marks)

population rates
known infected perpetrator
concurrent STI infection
injury secondary to assault
type of sexual assault - oral/vaginal/anal

3. . Give three examples of strategies to preserve potential forensic evidence. (3 marks)

don't wash/PU/eat/drink
keep clothes
reduce delay to collection
Collect first urine sample

SAQ 13 Answer.

A 35- year- old woman presents to the ED with a recent diagnosis of hyperthyroidism. She has not started treatment. Her vital signs are:

BP 110/60; HR 140/min in sinus tachycardia; RR 22/min SaO2 98% on Room Air; Temp: 37C

She is anxious and orientated to time place and person.

She has no cardiac failure on examination.

1. What are the 4 cardinal clinical features that distinguish hyperthyroid and thyroid storm? (4 marks)
   Features are shared with hyperthyroidism except they are more exaggerated together with a combination of the following:
   Fever > 38C
   CVS complications of heart failure (high output), HR in range of 200-300/min
   CNS complications: agitation to delirium, seizure and coma
- *GIT complications of abdominal pain and diarrhoea*

2. What is the major cause of mortality? (1 Mark)

Cardiovascular collapse

3. What specific treatments are required and why? (5 Marks)

Treatment	Justification

Treatment	Justification
B Blocker – eg metoprolol IV	Control of heart rate, aiming for **HR< 100/min.** IV metoprolol because of poor oral bioavailability
Carbimazole – 10-45mg up to tds	**Decrease peripheral actions of thyroid hormones**

SAQ 14 Answer

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) Bone tenderness over navicular or base of 5th MT, Ability to weight bear 4 steps at time of injury and at time of the assessment

b) Obvious deformity, suspected hindfoot or forefoot #'s

c) Analgesia, Plaster POP (walking). Plaster care/check advice, discharge analgesia, medical certificate, follow up ortho clinic.

SAQ 15 Answer

A 35 year old woman presents with palpitations and shortness of breath. On arrival her BP is 70/40. An ECG is taken.

a) Rate @ 240, Rhythm irregular (AF),rightward access, Delta waves, / fusion beats in severalleads esp lead 2 and V1

b) AF RBBB, WPW with aberrancy, VT, Torsades.

c) Resus with full monitoring, supplemetal O2, iV access, fluid bolus, synchronised DC cardioversion 100J with sedation and analgesia

SAQ 16 Answer

A 23-year-old man with known asthma is brought to ED by ambulance with an acute exacerbation. He has a RR of 36 /min, he is barely able to talk. His saturations are 99% on 15 litres by non rebreather mask

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

b. Altered LOC, increased WOB (RR, respriatory muscle use), poor breath sounds (silent chest), cardiovascular compromise

c. CXR, coinfection/pneumothorax, Blood gas analysis, evidence of resp failure (acidosis with normocarbia -hypercarbia)

d. Supplemental O_2 if Sat <93%

   Optimise patient position

   Bronchodilator therapy

   Salbutamol continuous nebs, IV boluses and/or infusion

   Ipratroprium bromide nebs

   IV Magnesium

   BIPAP

   Call for Help/ICU admission assitance

   Prepare for RSI and ventilation

SAQ 18 Answers

A 72 year old diabetic female is brought to your Emergency Department by ambulance. She complains of feeling generally unwell for the last 2 days with abdominal pain, cough and fevers.

Vitals signs:	Pulse	121
	BP	89/58
	RR	28
	Sats	89% Room Air
	Temp	39.8 ^{o}C

a)

Resuscitation - 1/2 Mark
Screening / diagnosis e.g. blood cultures / biochemistry etc. - 1/2 Mark
Antibiotics - broad spectrum cover required - 1 Mark
1/2 Mark each for any two of:
- *Source Control*
- *Monitoring*
- *Disposition*
- *Boundary of Care*

b)

1 Mark each up to 4 marks from:
- *CVP 8-12 mmHg*
- *MAP >65 mmHg*
- *Urine output >0.5ml/kg/hr*
- *Central venous sats >70% or mixed venous sats >65%*
- *Lactate clearance*

C)

1/2 Mark for each of :
- *Tidal volume 6ml/kg*
- *Plateau pressure <30 cm H_2O*
- *PEEP Titrated to FiO_2 Minimum 5 cm H_2O - Maximum 24 cm H_20*
- *FiO_2 Titrated to Sats 88-95% or PaO_2 55-80 mmHg*

Answers taken from Surviving Sepsis Campaign International Guideline for Management of Severe Sepsis and Septic Shock 2012 and ARDSnet NIH NHLBI ARDS Clinical Network Mechanical Ventilation Protocol Summary

SAQ 19 Answer

1. **A 49 year old male presents following taking 9.6 g verapamil 2 hours ago. On presentation, he has a HR 60, SBP 100.**

   Outline your risk assessment and initial management of this patient. (40%)

Risk Assessment (1 mark)

This is a potentially fatal overdose because verapamil is a calcium antagonist that can cause bradycardia and hypotension secondary to peripheral vasodilation and negative inotropic effect.

Initial management (3 marks)

- The patient needs to be decontaminated at the earliest possible time with one dose of AC followed by WBI with polyethylene glycol (15 mL/kg/hr polyethylene glycol until effluent is clear).
- Patient may need to be intubated for airway protection and if patient refuses to have decontamination.
- Establish IV access for treatment.

Two hours later, patient dropped his HR to 40 and SBP 60.

Outline your key management for this patient now (60%)

- Patient needs to be resuscitated and have intubation for airway protection & decontamination concurrently.
- C: IV fluid up to 3 L NaCl,. (1 mark)
- Ca gluconate 10% 10 mL x6 (1 mark)
- Start HIET with bolus 1 u/kg actrapid, pre-treat with 50% Dx 50 ml followed by 1 u/kg/hr actrapid and 10% Dx infusion to maintain BSL between 5-10 mmol/L. keep K above 3 mmol/L (< 5 mmol/L).v(1 mark)
- Bolus dose of adrenaline to maintain mean BP 65 mm Hg. Commence noradrenaline infusion. (1 mark)
- A: intubate with ketamine and suxamethonium (1 mark)
- B: intubate with RSI and ventilate
- D: decontaminate as above if not already done.
- If above regime fails to maintain haemodynamic stability, patient should be considered for ECMO. There are little evidence for intralipid and methylene blue but they could be tried if all else fail. (1 mark)

SAQ 20 Answer

A 30 year old woman (45 kg) has been unwell for the past week with generalised fever, myalgia and arthralgia. She presents to ED because her symptoms have not improved and she now has nausea and abdominal pain. She admits to taking 1g of paracetamol every 4 hrs for her symptoms in the last week.

Her LFTs:

BSL = 5.6
Bilirubin = 15 umol/L (0-25)
Gamma GT= 36 U/L (0-56)
ALP = 82 U/L (38-126)
ALT = 175 U/L (< 45)
AST = 215 U/L (<45)

Paracetamol = 188micromol/L
INR = 1.1

a) Outline your risk assessment of this patient. (50%)

- This patient has taken a staggered overdose of paracetamol (133 mg/kg/d) which is potentially hepatotoxic. (criteria is >4 g/d for more than 2 days) (1 mark)
- She has symptoms of abdominal pain with nausea which is a sign of paracetamol induced hepatotoxicity, although viral hepatitis cannot be excluded as she showed signs of viral infection. (2 marks)
- She has classical biochemical abnormality of her liver function with elevated transaminase caused by paracetamol toxicity. The INR is normal but it is still early days.(1 mark)
- The detectable paracetamol level has to be assessed in conjunction to her last dose of paracetamol and the nomogram cannot be used to assess her paracetamol toxicity. It is slightly more elevated than a therapeutic dose of paracetamol suggesting she may have reduced capacity in metabolizing the paracetamol. (1 mark)

b) Outline the key management of this patient (20%)

Start NAC infusion until the INR and transaminase start to go down. (1 mark)

Supportive treatment: careful fluid balance, monitor INR, EUC and acid base to look for indicators of worsening liver function. (1 mark)

c) Outline key features when you would contact the liver unit for a possible liver transplant. (30%)

King's College Hospital criteria as indicator of fulminant hepatic failure. ANY 3 answers below.

Metabolic acidosis: pH 7.30 after fluid and hemodynamic resuscitation (1mark)

Coagulopathy: PT ?100 seconds, (1 mark)

ARF: Creatinine ?3.3 mg/dL

Grade III or IV encephalopathy is predictive of a patient who will die without transplant.

Also, a blood lactate concentration ?3.5 mmol/L at a median of 55 hours after APAP ingestion or blood lactate concentration ?3.0 mmol/L after fluid resuscitation was shown to be both a sensitive and a specific predictor of patient death without transplant.

SAQ 21 and 22 refers to the same stem

A 77 year old woman is brought in by ambulance. She was found on the floor of her home. She has been lying there for at least 36 hours On arrival :

Temp: 34.5C

HR 130/min Bedside dextrostix 6.2

BP 113/80

RR 24/min

SaO2 – unable to obtain

Her VBG:

- pH 7.32
- pCO_2 39
- HCO3 19.5
- BE -5.5
- Lactate 3.9

Her EUC

- Na 140
- K 6.6
- HCO3 15
- Urea 29.6
- Cr 368

CK 6886

FBC

- W 17.5
- Hb 146
- Plat 365

1. Interpret her vBG (2 marks): *Metabolic acidosis –acute with no renal compensation due to low HCO3. Consistent with time not seen as 36 hours as it takes 3-4 days for renal compensation.*

2. Interpret her EUC (2 marks) *hyperK due to renal insufficiency/failure. Urea is raised, Hb is not low, unlikely raised urea is due to GIT blood loss.*

3 Interpret her FBC (2marks): *Mildly raised WCC, may be consistent with acute illness – need to look for underlying infection as a cause for the fall. Not anaemic.*

4 Interpret her CK (1 mark): *Raised CK due to rhabdomyolysis from long lie with dehydration.*

5 What is your overall assessment of these results? That is, what do they mean to you?(3 marks) *Any shortened version of the points below is acceptable as long as it represents a synthesis of the whole picture.*

Precipitating event leading to a fall needs to be sought – most likely infection such as a UTI. Other causes such as stroke or AMI needs to be considerd.

Post-fall and unable to get up suggests loss of mobility secondary to injury incurred from the fall. Hence needs to assess for injury. May also have pre-morbid borderline mobility and hence a minor fall with no significant bony injury may still have prevented her from getting up without assistance.

Dehydration may have caused or worsened pre-existing renal insufficiency.

Long lie in one position likely to have caused rhabdomyolysis. Inablity to clear myoglobin would cause renal tubular damage – worsening/causing renal insufficiency/failure

Implication – will need admission for management

SAQ 22

On further examination , she doesn't know the date but is able to tell you the year and month.

1. What are the important features to look for in your examination? (5 marks)

Vital signs

Evidence of injury – head injury as a cause of her poor cognitive function

Other injuries – bony/soft tissue

Evidence of precipitation causes such as stroke, AMI, infective focus

Evidence of pressure injuries – erythema, skin breakdown, ulcers

Evidence of loss of function – mobility, speech etc

2. List the steps in your management of this patient? (5 marks)

Analgesia if appropriate

Cardiorespiraotry monitoring – HYPERK

Treat hyperK

Attend to her abnormal vital signs- rewarming, rehydration likely to correct her perfusion and hence her tachypnoea and tachycardia

Ensure adequate UOP – for her rhabo

Treat electrolyte abnormalities

Treat underlying cause

Treat injuries

Prevent secondary injuries

Admission

Next of kin

SAQ 23

This 42 year old man presents with fever and anorexia for the last 3 weeks. He has had a dry cough for the last month. His RR is 28/min. SaO2 94% RA. HR 105/min. Temp 38.5C.

1. List the main features in his CXR (3 marks)
   Right sided pleural effusion with air fluid level – consistent with a cavitation in the right lung – RLL

   Atelectasis of the RUL

   No midline shift

2. What is your management of his problem? (7 marks)

Supportive treatment	Specific treatment	Disposition
Review nutritional status	Antibiotics for likely organisms – depending on history. TB, Klebsiella need to be considered	Consider admission but OPD management may be acceptable
	Respiratory consultation and cardiothoracic consultation this is chronic	

SAQ 24

A 25 year old man is an unrestrained driver of a car involved in a single vehicle accident 30 mins ago. He hit a tree. He was out of the car at the scene and the front airbag was triggered. He initially complained of chest pain.

On arrival to the ED, he is uncooperative. On a Hudson mask at 10L/min, his SaO2 90%. His HR is 117/min with a BP of 85/50mmHg. He has a RR of 32/min. A mobile CXR is performed during the primary survey. An urgent bedside procedure is performed. Subsequently, his HR is 105/min, BP 100/70, RR 24/min and SaO2 100% on 10L/min via Hudson mask.

1. What is shown in the CXR?(2 marks)
   Left haemopneumothorax with obliteration of the left hemidiaphragm

2. A needle decompression was performed. A chest tube insertion followed. List the important steps in the insertion of a chest tube in this patient. (5 marks) *Any reasonable version of the steps below is acceptable. Need to demonstrate familiarity with procedure and safe practice*
   Drugs
   - *local anaesthetic*
   - *anxiolytic/ amnestic for procedural sedation may be required*

   Personnel
   - *someone to perform the procedure*
   - *Assistant (s) to administer procedural sedation/titrate analgesia*
   - *Nursing assistant*

   Equipment
   - *Standard equipment for insertion of tube thoracostomy*
   - *Large Fr intercostal tube for draining haemothorax*
   - *Underwater seal drainage system*
   - *IV cannula*

   Technique
   - *patient positioning – semirecumbant if tolerated, LLL away from site of tube*
   - *Aseptic technique*
   - *Location – insertion of ICC in triangle of safety*
   - *Local Anaesthetic above rib, anaesthetize skin, SC, parietal pleura*
   - *Incision of skin wide enough for insertin of intercostal tube*
   - *Blunt Dissection above rib to pleural cavity*
   - *Finger used to assist blunt dissection – ensure no fibrosis*
   - *Guided insertion of chest tube, aiming downwards due to haemothorax*
   - *Ensure all hole in tube is within pleural cavity*
   - *Ensure swing to demonstrate insertion into pleural cavity*
   - *Secure intercostal tube*
   - *Taping to skin*
   - *Taping all connections between tube and underwater drain*
   - *Leave on free drainage*
   - *Monitor amount of drainage*

SAQ 25 Answer

a) Angioedema, Anaphylaxis, Trauma (haematoma)

b) Previous episodes and how managed. Allergy history, medication history, family history of similar events

c) 1.Resus with full cardiorespiratory monitoring,
2.Urgent airway call is needed (anaesthetics/ICU), difficult airway and surgical airway kit at bedside,
3.Optimise current airway by positioning , supplemental O2 if hypoxic
4.Adrenaline neb(5mg) and/or IM (.3-.5mg), IV access,
5.If history of C1 esterase inhibitor deficiency , ? availability of that or consider FFP (for a star)

SAQ 26 Answer

A 50-year-old inmate from the prison is brought to the ED.

Name three of the commonest presentations for these patients? (3 marks)

Any of the following:

1. *Injury/trauma*
2. *Drug-related syndromes: intoxication or withdrawal*
3. *Complications of a medical disease – seizure disorder, coronary heart disease, diabetes, infections*
4. *Mental health related problem*

List the challenges you expect to encounter in treating these patients together with the strategies you would use to overcome them.

NB: Marks are given for both the challenges and strategies identified. (7 marks.)

Challenges	Strategies
Co-morbidities – undeclared, minimal information, untreated	Seen by experienced medical staff – ie not for interns
Assessment of patient with security guards present – lack of confidentiality	Awareness of this and have a higher reliance on clinical signs as there is minimal opportunity to obtain a reliable history. Lower threshold for investigation.

	Awareness of that the commonest causes for presentation are as above: trauma, drug-related, mental health issues apart from undeclared co-morbidities.
Compliance with discharge plans including medications and follow up appointments	Prescriptive written and verbal communication with the designated medical officers in the prison is optimal. Follow up appointments are usually not attended because of the logistics involved. Hence if they are absolutely necessary, the importance of this must be communicated.

SAQ 27 Answer

a) Septic arthritis, Gout, reactive arthritis (Reiter's), RA, other sero-negative arthritis, drug induced

b) Known rheumatologic disorder, prev Gout, recent STI, diarrhoeal or viral illness. Family history, IBD,Systemic symptoms (fever/chills, sweats, lethargy)

c) FBC; ? anaemia of chronic disease
ESR and CRP; confirm inflammatory process
HLA B27; ?AS
Rheumatoid factor and ANA rule out other
Joint aspirate can diagnose septic arthritis, gout and pseudogout
STI tests
Stool tests confirm recent GI infection
NB; x-rays of little value

d) For arthritis analgesia (typically NSAID's), Inform patient, medical certificate as required.
For STI's, AB's doxycycline 100mg 7 days, azithromycin 1G or similar.
Contact tracing, Advice re unprotected sex, Follow up and retesting.

SAQ 28 Answer

1) pre-renal impairment: dehydration
pregnancy with hyperemesis
UTI
lithium induced nephrogenic diabetes insipidus
DKA/HHS
drug interaction with impaired renal excretion - NSAIDs
hyponatraemia
acute overdose in the setting of chronic ingestion

2) toxic alcohols - methanol, ethylene glycol, isopropyl glycol, ethanol
heavy metals - iron, lead, potassium, mercury, arsenic, cyanide
acids/alkali

3) haemodialysis

4) Pregnancy medical care - obstetric physician input given ongoing need for diabetes control and likely lithium requirement during pregnancy - lithium being teratogenic (tricuspid valve abnormalities)
Tie in with GP
Psychiatric care and support during pregnancy - tie in with maternal mental health
Maternity care, including scans
Social supports - social worker involvement
Pregnancy advice - safe behaviours/listeria avoidance/drugs in pregnancy/smoking/alcohol

SAQ 29 Answer

A 47 year old male who has a mitral valve replacement on rivaroxaban presents after repeatedly taking extra doses of his rivaroxaban for the past 10 days. He has fallen and presents with a scalp haematoma.

On examination: GCS=10, HR = 90, BP= 115/70
His INR is 10.

Outline your risk management of this patient. (40%)

- This patient has developed a coagulopathy secondary to a staggered overdose of rivaroxaban which is a factor Xa inhibitor. The elevated INR indicated that he has a significant depletion of his factor X. (2 marks)
- The fall with a scalp haematoma and reduced GCS suggests he may have a significant head injury with intracerebral haemorrhage. (2 marks)

Outline your key management for this patient. (60%)

- Check FBC and APTT and x match patient. (1 mark)

- Reverse the coagulopathy with prothrombinex (50 u/kg) in consultation with haematologist. FFP and blood products are unlikely to help to reverse the coagulopathy. (2 marks)

- Perform a neurological exam to look for focal deficit and organise an urgent head CT. (1 mark)

- Intubate and hyperventilate if patient drops his GCS, +/1 giving mannitol if there are signs of coning. (1 mark)

- Contact neurosurgeon regarding patient for possible surgery and intervention. (1 mark)

SAQ 30 Answer

A 59 year old man presents with this rash of 10 days. His main complaint is pain. He is the father of 3 children under the age of 5 years and his wife is currently pregnant.

1. What are the main features of this rash? (2 mark)
   Lesions location - consistent with 2 dermatones, unilateral

   Lesions description – dried crusting lesions, scaring, some vesicles – hence lesions of various ages

2. How would you manage his main complaint of pain? (2 marks)
   Analgesia

   - *simple analgesia such as paracetamol and NSAID*
   - *May but less likely to benefit from antiviral for herpes zoster but may be worthwhile as he appears to still have a few vesicles*
   -

3. What do you need to do for his children and his pregnant wife? (6 marks)

He still has vesicles- keep these lesions covered

IF the family has been living with him – children and pregnant wife are likely to have been exposed.

Both may be infected

Need to know his wife's dates when he first developed the lesions and exposure to wife at the time – for foetal outcome. Much worse if in first trimester.

Need to know amount of contact and age of children