

SALHN Booklet 2

Answers

SAQ 10

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A 16 year old woman is brought to the emergency department by her parents who are concerned about her recent loss of weight. She is known to have an eating disorder and currently has a BMI of 15.

List ten (10) significant physiological complications of Anorexia (5 marks)

Cardiovascular

Hypotension
Bradycardia
Sudden Cardiac Death

CCF

GI

Hepatitis

Constipation

CNS

Impaired Cognition
Delirium

Electrolyte

Hypokalaemia

Hypoglycaemia

Hypoalbuminaemia

Hypercholesterolaemia

Haematological

Anaemia

Marrow Suppression

Clotting abnormality

Musculoskeletal

Muscle Catabolism

Osteoporosis

An arterial blood gas is performed and shown below

pH 7.53

pCO₂ 51

Na 131

K 2.2

Cl 75

Base Excess 25.3

HCO₃ 48

What are the significant abnormalities shown? (3 marks)

Primary Metabolic Alkalosis with secondary respiratory alkalosis

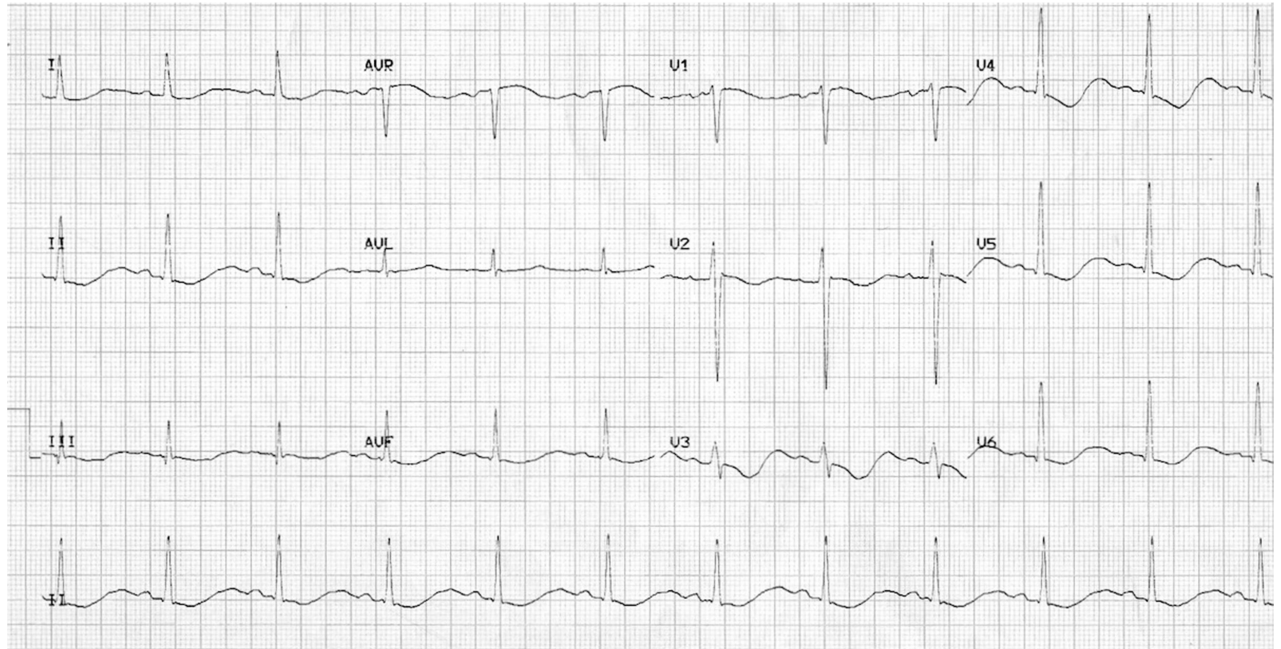
Mild hyponatraemia

Severe hypokalaemia

What is the likely underlying cause? (2 marks)

**Prolonged vomiting causing hydrogen ion loss causing metabolic alkalosis
Malnutrition and poor intake causing hypokalaemia**

An ECG is performed and shown below



What are the significant findings shown on ECG? (3 Marks)

**ST depression with T wave inversion and U waves
Significantly Prolonged QU interval
Consistent with severe hypokalaemia**

What significant arrhythmia is this patient at risk of? (1 Mark)

Ventricular arrhythmias VT, VF, Torsades de Pointes

The patient is admitted nutritional rescue.

What are the major electrolyte abnormalities associated with refeeding syndrome? (3 Marks)

**Hypokalaemia
Hypomagnesaemia
Hypophosphataemia**

What vitamin is also deficient must be supplemented ? (1 Mark)

Thiamine B1

SAQ 11

An 8yo boy presents with right thigh pain after falling 2m out of a tree. Primary survey is unremarkable. He has obvious swelling of his right thigh, but no other apparent injuries.

An XR reveals a midshaft # femur, that is off-ended and significantly shortened.

As part of his management the registrar decides to perform a femoral nerve block. They use 20ml of 0.75% Ropivocaine, with ultrasound guidance.

Q1

What is the maximum safe dose of ropivocaine for this child?

3mg/kg, 75mg or 10ml of 0.75%

Q2

Outline the clinical features of local anaesthetic toxicity.

i) Early symptoms

Perioral paraesthesia, tinnitus, anxiety, confusion, dizziness

ii) Severe toxicity

seizure, coma, arrhythmia, hypotension, cardiac arrest, respiratory depression

Q3 The patient shows signs of severe toxicity. Outline your resuscitative measures.

Intubation, ventilate to pH, Na bicarb, fluids->inotropes for hypotension, benzodiazepines for seizures, lipid emulsion

Q4 List 5 measures to improve safety of nerve blocks in your department?

Limit LA options (no bupivacaine in department, single strength of ropivocaine)

Reminder of dose, especially for paediatrics (poster, note on drug box)

Double checking of doses for paediatrics

Credentiailling for procedures

Education (more limited usefulness)

More senior staffing on the floor

SAQ 13

Question 1. This is a copy of her 12 lead ECG. Please list two abnormal findings from this image. 2 marks

Sinus tachycardia

RBBB

S1Q3T3 – being poorly specific for PE was not accepted

Question 2. Your provisional diagnosis is pulmonary embolus. Please list two pros and two cons for each of the following tests. 8 marks

Test	Pros	Cons
D dimer	<ul style="list-style-type: none">-Readily available-No radiation-possibly good negative predictive value in context of gestalt low pre-test probability- Negative result rule in PE preventing further invasive tests-controversial	<ul style="list-style-type: none">-Use with Wells score not validated in pregnancy-“normal range” in late pregnancy unknown-poor positive predictive value and often positive in late pregnancy
Lower limb Doppler US	<ul style="list-style-type: none">-No radiation-Good positive predictive value-Positive result rule in PE preventing further invasive tests	<ul style="list-style-type: none">-Poor negative predictive value in pregnancy-proximal/pelvic DVTs
VQ scan	<ul style="list-style-type: none">-Good negative and positive predictive value- PE rule in and rule out	<ul style="list-style-type: none">-Radiation dose-higher dose than new generation CTPA
		<ul style="list-style-type: none">-Bladder accumulation of contrast with high foetal radiation dose-poor accuracy in context of background lung disease-indeterminant result forces further testing
CT pulmonary angiogram	<ul style="list-style-type: none">-Good negative and positive predictive value- PE rule in and rule out-probably better than VQ scan-could be considered “gold standard”	<ul style="list-style-type: none">-Radiation dose- new generation machine lower dose than VQ scan

	-rule in alternative diagnosis ie. other pathology -good accuracy in context of background lung disease	-High active maternal breast tissue radiation dose - Theoretical risk foetal thyroid tissue from iodinated contrast -risk iodine related allergic response
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Question 3. These are copies of two axial slices from her CTPA. Please list one abnormal finding from each of these images. 2 marks

Saddle embolus

Right atrial dilatation

Bilateral consolidation/collapse being non-specific for PE therefore not accepted

SAQ 14

SAQ 14 (11 marks)

You are a newly appointed consultant working in a regional ED. You have had a patient interaction a few days ago which is concerning you.

You reviewed an elderly Aboriginal woman who presented with lethargy and shortness of breath. A work-up revealed severe renal impairment and a potassium of 7.2 mmol/L.

The patient spoke almost entirely in her first language with her 14-year-old granddaughter acting as an interpreter. You felt you gave a comprehensive explanation of the diagnosis, plan and need for admission. The patient appeared to understand, nodding occasionally and saying “yes”.

Unfortunately, 30 minutes later her nurse reported that both the patient and her granddaughter had walked out of the hospital shortly after you left the bedside.

- a. What are four (4) suggestions to help prevent a similar situation occurring in the future? (4 marks)
- **Always use an accredited/formal translator, and never a child**
 - Early involvement of Aboriginal Health Workers or Liaison Officers
 - These workers are *not* synonymous with translators
 - Touch base with patients frequently and explain the care plan
 - Address non-medical needs (e.g. blankets, food, family)

- Ensure important family members or community elders are involved
- Closed-loop communication; check patient's understanding

Pass = 3/4

In the context of a child interpreter in the stem, failing to recognise that a child cannot interpret for this patient is a critical error (i.e. 0/4).

b. List four (4) department-wide strategies you could implement to ensure culturally safe medical care is available? (4 marks)

- Ensure a cultural history is taken from all patients/families
- Policy development considers the diverse health beliefs of the population
- Develop prompts so that management plans account for cultural obligations
- Ensure availability of cultural/religious consultants
- Professional interpreter services are available at all times for languages in the ED catchment
- Create strong links with healthcare providers of local minority populations
- Consumer feedback mechanisms allow culturally diverse input
- There is a system for non-judgmental reflection of cultural issues
- Cultural training workshops/education sessions
- Design of department with cultural sensitivity in mind
 - Some examples: outdoor space, segregated gynae rooms, meeting space

Pass = 2/4

c. A culturally competent approach to health care requires specific skills, knowledge and attitudes. What are three (3) GENERAL principles of a culturally competent approach to health care that may help you to care for a similar patient? (3 marks)

- Knowledge of the patient's ethnicity and resulting health challenges
- An understanding of the beliefs and structures present in different cultures
- A non-judgmental/empathetic/respectful approach to other cultures
- Ability to integrate cultural concerns into management plans
- Self-awareness of one's own culture and its impact on practice.

Qualities essential to providing good healthcare that are not specific to culturally competent care should not score.

Pass = 2/3

SAQ 15

A 6 month old boy is brought to the emergency department by his mother with 48 hours of vomiting and diarrhoea. He is normally healthy with no significant past medical history. His weight is 8kg.

His vital signs are as follows:

T 36.5°C, HR 140/min, RR 44/min, SpO₂ 96% RA

On examination, he is alert and has a capillary refill time <2 seconds. His eyes are sunken, with slightly dry mucous membranes and decreased skin turgor. His BGL is 4.5mmol/L.

You diagnose him with gastroenteritis.

- i. What is his degree of dehydration? (1 mark)
Moderate dehydration
- ii. Complete the table below. Please demonstrate your working when calculating the rate of administration. (8 marks)

	Nasogastric rehydration	IV rehydration
Indication (2 marks) (only one required)	Failed oral rehydration	Ongoing frequent vomiting of enteral fluids Shock Failure to improve despite oral/NG therapy
Choice of rehydration fluid (2 marks)	Oral rehydration solution (ORS) e.g. Hydralyte, Gastrolyte	0.9% NaCl + 5% Glucose
Rate of administration (ml/kg/hr) and duration of therapy (4 marks)	Rapid rehydration with 100ml/kg over 4 hours (25ml/kg/hr = 8x25 = 200ml/hr for 4 hours	Rapid rehydration: 10ml/kg/hr (80ml/hr) for 4-6 hours OR Slower rehydration: Maintenance of 4ml/kg/hr (32ml/hr) Deficit = 5% x 8kg x 10 = 400ml over 24 hours approx. 17ml/hr Total 50ml/hr Deficit can be replaced quicker i.e. 8 hours

- iii. List 3 clinical signs that should be monitored during rehydration (3 marks)
**Change in weight
Urine output
Clinical signs of dehydration
Ongoing losses
Signs of fluid overload such as puffy face/ extremities**

SAQ 16

A 78 yo gentleman presents to your major metropolitan Emergency Department after slipping over whilst putting out the bins. X-Rays reveal a left sided subcapital fractured neck of femur, however, fortunately there are no other injuries.

Your registrar decides to use an ultrasound guided femoral nerve block to help manage the patient's pain and asks for your help supervising.

a) Using the US image obtained (**PROP**) name the numbered structures. (3 marks)

1. **Femoral Vein**
2. **Femoral Artery**
3. **Femoral Nerve**

b) Which structure is most lateral ? (1 mark)

Femoral Nerve

c) List the steps involved in performing an ultrasound guided femoral nerve block. (8 marks)

- Consent – include alternatives, risks including failure of block and LA toxicity. Involve family / NOK if not competent.
- Sterile technique including probe cover on US, chlorhex prep to area
- Prepare LA and dilute to 20 – 30mL with saline for volume block
 - max 3mg / kg ropivacaine
 - max 2mg / kg bupivacaine
 - may choose to inject small amount of lignocaine to skin (ie skin wheal), but not necessary. If do use lignocaine, have to factor this in to total LA dose for toxicity calculations.
- Identify anatomy with US
- In plane or out of plane technique with nerve block needle – ensure needle tip visualised at all times.
 - if needle tip lost, hold probe still, manipulate needle gently whilst looking at screen to find needle (can reverse this, with principle being that you only ever move one of the 2 (probe or needle) at a time to re-establish orientation.
 - must not inject if needle tip not seen.
- When needle visualised near nerve, aspirate to ensure not in vessel, then inject local slowly, aspirate every 3-5mL to document no vessel entry, aim for 'donut' of LA around nerve.
- Review possible signs of LA toxicity with patient and ensure nursing staff aware of these and to check patient for them and block effectiveness closely in the next 15 minutes.
- Document procedure.

SAQ17

You are the consultant in a tertiary hospital ED. A 25 year old woman, G2 P1 who is currently 20 weeks pregnant, attends the ED with a sore neck. She discloses to the resident that she was strangled by her partner during an altercation earlier in the evening. The resident comes to you for advice.

What features of history or examination would suggest her neck injury needs further investigation? (6 marks)

1. Visible local bruising / swelling / petichiae
2. Dyspnoea / stridor
3. Dysphonia / voice change
4. Neurological deficit
5. Carotid bruit
6. Bony cervical spine tenderness
7. History of LOC or altered GCS
8. Other reasonable

Subcut emphysema
Pain / Difficult swallowing

NB: 7. Let purple swelling + petichiae separately.

After further assessment you decide the patient does **not** require specific investigation of her neck injury. She declines to stay in the ED for any further assessment as she was mainly worried about her neck.

What are the important points to address prior to discharge of this patient? (6 marks)

1. Safety of patient and any children
2. Careful documentation of injuries in case of future legal issues -
3. Conceal patient identity in the ED
4. Referral to social work or other expert service for counselling
5. Offer to assist with police contact
6. Ongoing antenatal / medical care
7. Other reasonable

analgesia / return precautions

• No one mentioned documentation (competence?)

• watch out for local quirks eg DV reporting in NT

• Nothing in stem to imply that patient is intoxicated or lacks capacity.

SAQ18

You are a consultant working in a regional ED without speciality services or advanced imaging.

An elderly man is brought to your ED after a fall the day prior. His daughter reports he tripped over whilst walking, was unable to break his fall, and landed chin-first on the ground. She reports he has had difficulty mobilising since the fall and is now “struggling to even lift a tea cup he’s so weak”. Your RMO has initially assessed the patient and ordered X rays of the C spine which show only ‘degenerative changes’. You are concerned about central cord syndrome.

a) List the 3 MOST COMMON findings on physical examination in this condition?

1. **Incomplete paralysis** (upper limb weakness **greater than** the lower limb)
2. **Incomplete sensory loss** (upper limbs **greater than** the lower limbs)
3. **Urinary retention**/bladder dysfunction

/5

b) State your plan for safe disposition of this patient?

1. Apply **C spine precautions**/immobilise
2. Arrange immediate **transfer to** closest referral centre with **MRI**
3. Notify **neurosurgical team** at referral centre of transfer

/3

c) The daughter is distraught and asks you what the prognosis for this condition is – what will you tell her?

1. **Good prognosis** – most patients will ambulate and have some return of hand movement

/1

d) List 2 other cause of central cord syndrome besides trauma?

1. **Tumour** (eg syringomyelia or intramedullary tumor)
2. Cervical **spondylosis**

/2