# Leicester FCEM Course Autumn 2011

## Short Answer Question (SAQ) Paper 2

## Answers

## Question 1

What is the diagnosis & cause? [2 marks]

Ulcerative Keratitis

Herpes simplex virus causes dendritic ulcer

Give 4 non-ocular features of this condition. [2 marks]

Any of: Headache, Fever, Vomiting, Lethargy, Neck pain, Herpes simplex encephalitis

List 3 steps in treating this patient. [3 marks]

Analgesia, Eye pad, Refer to Ophthalmology for scrapping and gram stain

Which drug treatment is indicated, and what is the dose and route? [1 mark]

Aciclovir 3% topical eye cream, 5 times per day.

Which drug treatment is contraindicated? [1 mark]

Topical steroids

Give 2 other examples of conditions which present with a painful red eye, and are a threat to sight. [1]

Acute closed angle Glaucoma

Acute Iritis

## Question 2

According to NICE guidelines, when should pain be assessed in patients who present to the Emergency Department with a hip fracture? [2 marks]

(a) Immediately upon arrival

(b) Within 30 minutes of analgesia being administered

What is the anatomical classification of femoral neck fractures? [2 marks]

Intracapsular / Extracapsular / Trochanteric / Subtrochanteric *(as per NICE CG124)*

Which type of analgesia is contraindicated in this patient? [1 mark]

NSAIDS

Which regional anaesthetic technique may be suggested in the Emergency Department for patients with femoral neck fractures? [1 mark]

3 in 1 block / fascia iliaca block (half mark for femoral nerve block only)

What are the advantages of regional anaesthetic technique over systemic analgesia in patients with hip fractures? [2 marks]

Fewer systemic side effects

Longer duration of action

Which alternative imaging modality is recommended if a femoral neck fracture is clinically suspected, but not confirmed by plain X-rays. [2 marks]

Magnetic resonance imaging (MRI)

If MRI is not available within 24 hours or is contraindicated, consider computed tomography (CT).

## Question 3

Give 6 contraindications to a Bier's Block. [3 marks]

Any 6 of:

Severe Hypertension or obesity

Severe peripheral vascular disease, Raynaud's syndrome

Sickle cell disease or trait, Methaemoglobinuria

Children aged <7years, Uncooperative or confused patients

Procedures needed on both arms

Surgery which may last >30 mins

Surgery which may need tourniquet to be released

List 4 other anaesthetic techniques which can be used during reduction of a Colle's fracture? [2 marks]

Haematoma block

Brachial plexus block

Sedation with analgesia

General anaesthesia

What is the maximum dose of lidocaine (with and without adrenaline) when used for local or regional anaesthesia? [2 marks]

3 mg/kg plain

7 mg/kg with adrenaline

Name 3 anaesthetic agents which can be used for rapid sequence induction of anaesthesia in the Emergency department. State the dose for each agent. [3 marks]

Thiopentone 3-7mg/kg

Ketamine 1-2mg/kg

Etomidate 0.3mg/kg

(No marks for propofol or morphine/midazolam as the question asks for *anaesthetic agents for RSI.*)

## Question 4

What is this patient's Glasgow Coma Score (GCS)? [1 mark]

E2, V2, M4 = 8/15 (the 3 components should be shown)

What is the diagnosis in this patient? [2 marks]

Left extradural haematoma

With midline shift to right

What is the definitive treatment of this injury? [1 mark]

Craniotomy & evacuation of the haematoma.

When assessing the verbal component of the GCS, list the "Best verbal response" criteria for a patient aged 2 years. [4 marks]

1 = No vocal response

2 = Inconsolable, agitated

3 = Inconsistently consolable, moaning.

4 = Cries but is consolable, inappropriate interactions.

5= Smiles, oriented to sounds, follows objects, interacts.

In a child less than 1 year old with a suspected head injury, what are the specific indications for immediate CT brain scan? [2 marks]

GCS (paediatric) < 15 on assessment in the emergency department

Presence of bruise, swelling or laceration > 5 cm on the head

## Question 5

List 4 adverse features of bradycardia. [2 marks]

Shock

Syncope

Myocardial Ischaemia

Acute decompensated heart failure

Which clinical features would indicate a high risk of asystole? [3 marks]

Any of:

Recent asystole

Heart rate less than 20/min

Ventricular pauses > 3 seconds

Mobitz-II 2nd degree heart block

Complete AV block with ventricular complexes and HR < 40/min

What interim measures would you consider? State drug doses and routes where appropriate. [4 marks]

Atropine 600mcg iv bolus repeated 4 times (upto total 3mg)

Isoprenaline 20mcg iv bolus over 1 minute (twice), followed by infusion at 5mcg/min

Adrenaline 2-10 mcg/min iv infusion

Transcutaneous pacing

Which specific drug may be indicated for this patient? [1 mark]

Digibind

## Question 6

Give 4 immediate steps in the management of this patient. [4 marks]

Any 4 of:

Maintain adequate airway

Buccal midazolam 0.5mg/kg or rectal diazepam 0.5mg/kg

IV/IO Access

Lorazepam 0.1 mg/kg IV/IO

Bedside blood glucose test

Place in recovery position

Paracetamol PR/IV/IO 15mg/kg

What does the picture show and what is the diagnosis? [2 marks]

Koplick's spots

Measles

What is the incubation period and route of transmission? [1 mark]

Infectious just before the onset of the symptoms until 5 days after the rash appears (10-18 days)

Spread by airborne droplet

List 3 early complications associated with this condition. [3 marks]

Otitis media

Bacterial pneumonia

Encephalitis

## Question 7

If you were the first medical responder at the scene, what information should you communicate to the emergency services? [4 marks]

M – major incident declared or standby

E – exact location

T – type of incident

H - hazards

A – access / egress

N – number of casualties

E – emergency services on scene or required

(0.5 marks each, additional 0.5 mark if in correct order i.e. METHANE)

What is the sequence of events in managing such an incident? [4 marks]

C – Command, control, coordination

S – Safety

C – Communications

A – Assessment

T – Triage

T – Treatment

T – Transport

(0.5 marks each, additional 0.5 mark if in correct order i.e. CSCATTT)

You are asked to assist in primary triage. Assign triage categories to each of these patients. [2 marks]

Female, 40s, walking around with burnt clothes and hair. RR 36, BP 90/70, confused

Walking – therefore always P3

Male, 20s, lying on ground, RR 7, HR60, unresponsive

RR less than 9 – therefore P1

Male, 50s, lying on ground, RR 28, HR 130, drowsy

HR >120 – therefore P1

Female, 20s, lying on stretcher, deformed left thigh, RR 20, HR 90

HR < 120 – therefore P2

## Question 8

List 6 questions would you ask in the history. [3 marks]

Any 6 of:

Speed of onset

Any previous history of similar lesions

Whether itchy / painful

Red flags - trismus, sore throat, neck swelling, fever

Systemic upset – anorexia, vomiting, fever

Whether other family members are affected

Analgesia and treatments so far

Previous medical history, medications, drug allergies

Parents'/ patient's perception of what it might be

You decide this is impetigo. List 4 differential diagnoses you would consider. [2 marks]

Infected cold sore

Ringworm

Discoid eczema

Cutaneous lupus

This patient is suitable for outpatient treatment. What treatments would you give? State drug doses, routes, frequency and duration for each.[2 marks]

Flucloxacillin 250mg orally qds 5-7 days

Fucidin cream topically qds 5-7 days

What would you tell parents? [3 marks]

Any 3 of:

Highly contagious – risk of other family members / siblings contracting it

Usually responds well to oral and topical antibiotics

Supportive care – paracetamol / ibuprofen

GP follow up

Safety-netting - fever, vomiting with abx, non-response, spreading lesions

## Question 9

What are the initial steps in treating this patient? [4 marks]

i) 5 mls/kg of 10% dextrose

ii) 20mls/kg fluid bolus

iii) Controlled oxygen (keeping $SpO_2$ 75-85%), then intubation & ventilation

iii) iv broad spectrum antibiotics – either cefotaxime or benzyl-penicillin + gentamicin

Identify 2 abnormalities on the chest X-ray. [1 mark]

Any of: Cardiomegaly, Widened mediastinum, NG tube, Endotracheal tube

Give the 2 most likely general categories of differential diagnosis for this child. For each, give a specific condition which may explain his clinical status. [2 marks]

Sepsis (Group B streptococcal / E. Coli septicaemia)

Congenital cardiac (coarctation of the aorta / hypoplastic left heart syndrome / Tetralogy / TGA / etc.)

What investigation may help confirm the diagnosis? [1 mark]

Echocardiography

When duct dependant congenital heart disease is suspected what infusion should be started? State the dose. [1 marks]

Prostaglandin E2 (dinoprostone), 5-20 nanograms/kg/minute

List 2 side effects of this treatment. [1 mark]

Apnoea, hypotension

## Question 10

List the 5 criteria included in the Ottawa ankle rules [5 marks]

Tenderness over tip of medial malleolus / posterior edge of lower 6 cm of medial malleolus
Tenderness over tip of lateral malleolus / posterior edge of lower 6 cm of lateral malleolus
Tenderness over navicular
Tenderness over base of 5th metatarsal
Inability to fully weight bear both immediately and in the ED for four steps

List the 5 criteria included in the Ottawa knee rules [5 marks]

Age 55 years or older
Tenderness at head of fibula
Isolated tenderness of patella
Inability to flex to 90°
Inability to bear weight for 4 steps both immediately and in the emergency department

## Question 11

What diagnosis must be considered? [2 marks]

Diphtheria with myocarditis

What other finding is typically found on examination of the throat in this condition? [1 mark]

Pseudomembrane over the tonsils

What other differential diagnosis presents similarly? [1 mark]

Glandular fever / Infectious Mononucleosis

What antibiotic should be started, dose and route? [3 marks]

Erythromycin 10-12 mg /kg intravenously

(accept metronidazole / penicillin G / rifampicin / clindamycin)

What investigations should be performed? [2 marks]

ECG, FBC, Blood culture, Throat swab

What other treatment should be considered? [1]

Diphtheria antitoxin 20,000 units im

## Question 12

Outline 6 immediate management steps for this patient [3 marks]

Any 6 of: Evaluate for airway compromise, Oxygen, Contact anaesthetist urgently if airway compromise, Evaluate breathing and chest wall compliance, Assess circulation for signs of hypovolaemic shock, Secure iv access, Fluid resuscitation , Catheterise to measure urine output, Measure carboxyhaemoglobin level, Analgesia, Cover the burns, Look for associated injuries

Give 3 factors increasing the risk of death after major burns? [3 marks]

Increasing age

Increasing % BSA

Associated inhalational injury

Assuming 27% BSA burns, how much intravenous fluid does he need, and over what timescale? [3 marks]

Using Parkland Formula:

Vol (ml) of Hartmanns in first 24h = 4 x %TBSA x body weight (1 mark)

= 4 x 27 x 60 = 6480ml (1 mark)

3240mls first 8h / 3240mls second 16h (1 mark)

What procedure may be required if he develops respiratory failure despite positive pressure ventilation? [1 mark]

Chest escharotomy

## Question 13

Describe the procedure for a needle cricothyriodotomy [3 marks]

Patient supine, head extended

Identify cricothyroid membrane

Puncture membrane using purpose made kit or IV cannula

Aspirate air to confirm position in trachea

Advance cannula at 45 degrees caudal

Attach to high pressure oxygen supply

Ventilate lungs using Y connector or 3 way tap on oxygen tube.

In for one second or until chest rises, then release for long enough to enable expiration

Which related procedure would allow airway protection with a cuffed tube and higher airway pressures? [1 mark]

Surgical cricothyroidotomy

Once the patient arrives, you decide to attempt oro-tracheal intubation. List known 4 predictors of difficult laryngoscopy. [2]

Look Externally (beard, no chin, obese, pregnancy with large breasts and gravid uterus)

Evaluate 3-3-2 (between incisors, chin to thyroid cartilage, floor of mouth to thyroid cartilage)

Mallampati score I-IV (MP III & IV associated with difficult laryngoscopy)

Obstruction of the airway (stridor, hoarse voice)

Neck mobility reduced e.g. c-spine collar

List 8 key steps in rapid sequence induction of anaesthesia. [4 marks]

| | |
|---|---|
| (1) Preparation | (2) Pre-oxygenate |
| (3) Pre-medication | (4) Pressure (Cricoid) |
| (5) Paralysis with induction | (6)Pass the tube |
| (7) Proof of placement | (8) Post-intubation management |

## Question 14

Which nerve injury is associated with mid-shaft humerus fractures? [1 mark]

Radial nerve

What are the features of this type of nerve injury? [2 marks]

Wrist Drop
Loss off sensation over the dorsal aspect of the thumb

What type of fracture occurs in this area in children? [1]

Supracondylar humerus fractures

What neurovascular presentation is typically seen in such injuries? [2]

Median Nerve injury
Brachial Artery injury

What are the features of this type of nerve injury? [4]

**Motor loss to:**
Lumbricals 1st & 2nd
Opponens Pollicis
Abductor Pollicis brevis
Flexor Pollicis brevis
Pronator Teres
Flexor muscles except ulnar half of FDP

**Sensory loss to:**
Palmar aspect of hand
Loss of sensation to radial 2 ½ fingers

## Question 15

What is the name of the angles which are marked on the radiograph? [2 marks]

A Bohler's angle

B Gissane's angle

What is the normal angle for each? [2 marks]

A 20º-40º

B 90º-110º

List 8 other injuries which should be excluded in a patient with a calcaneal fracture after a fall from a height. [4 marks]

Fracture of the other calcaneum

Fractures of the foot

Fractures of the tibia / fibula

Fractures of the knees

Fractures of the femur

Fractures of the hips

Fractures of the lumbar spine

Compartment syndrome of the foot

List 4 immediate complications of Plaster of Paris application [2 marks]

Pain, paraesthesia, arterial compromise, venous insufficiency

## Question 16

What is the difference between an incision and a laceration? What are the potential medico-legal implications? [3 marks]

Incision – sharp implement with clean cut edges, either slash or stab

Laceration – blunt injury, skin is torn with irregular wound edges

Wrong documentation might imply different mechanisms of injury in an alleged assault

Give 6 things you can do to reduce the risk of infection in this wound [3 marks]

Thorough cleaning and washout

Debridement of devitalised tissue

Wound closure

Refer for exploration / washout under anaesthesia

Remove any foreign bodies

Prophylactic antibiotics

Dressing

List 4 features that make a wound tetanus prone, other than time delay? [2marks]

Puncture wounds

Animal bites

Heavy contamination with soil or faeces

Devitalised tissue

Burns

Compound fractures

Wounds or burns in patients who have systemic sepsis

Foreign bodies

This patient has only received 1 tetanus vaccination 12 years ago, and the wound is a tetanus-prone wound. After treating the wound itself, how would you treat him and what advice would you give? [2 marks]

Clean the wound

Give Human Anti tetanus immunoglobulin 250-500 units i.m. at a different site

Give a dose of Combined DPT and refer to GP for further doses

## Question 17

How could you differentiate between sinus tachycardia and supra-ventricular tachycardia in a child this age? [5 marks]

ST: history of fever, sepsis, dehydration etc., responds to fluid replacement; SVT: paroxysmal onset, no prodrome, abrupt offset

ST: P waves present & normal; SVT: P waves absent / abnormal

ST: rate changes with activity; SVT: rate does not change with activity

ST: constant PR, variable RR; SVT: abrupt rate changes

ST: rate <220 (upto x2 upper limit normal); SVT: rate>220 (more than x2 upper limit of normal)

Assuming this patient has SVT, how would you manage this patient? [5 marks]

ABC approach

Move to resus

Continuous cardiac monitoring

Get baseline ECG

Obtain vascular / IO access

Vagal manoeuvres – diving reflex / carotid sinus massage

Adenosine: 100/200/300 mcg/kg boluses

Synchronised DC cardioversion for unstable SVT – 0.5/1.0/2.0 J/kg with sedation

Alternative drugs – Digoxin/amiodarone/ procainamide / lignocaine

Cardiology consultation

## Question 18

When evaluating a CXR, list 4 radiographic features are suggestive of aortic dissection. [2 marks]

Any 4 of:

Widening of mediastinum, pleural effusion, tracheal deviation to right, displacement of intimal calcification >6 mm, pleural cap, widening of aortic knuckle, widening of ascending / descending aorta

When examining a patient with a Stanford A aortic dissection, which abnormality would you expect to find on cardiac auscultation? List the abnormality and the cause. [2 marks]

Diastolic murmur in aortic area due to aortic regurgitation secondary to aortic root dissection.

Which bedside investigation can help rapidly confirm this diagnosis, and what is the finding? [2 marks]

Bedside echo shows pericardial effusion due to aortic root dissection

What is the definitive investigation for a patient suspected of having an aortic dissection? [1 mark]

CT angiogram of the aorta

What is the immediate management of this condition? [3 marks]

Iv access, check FBC, U&E, coags, cross-match blood

Oxygen

Move to resus

Blood pressure control – iv metoprolol / labetalol – with invasive blood pressure monitoring

Analgesia

Liaise with cardiac surgeon and ITU

## Question 19

Describe and interpret the ECG.

ST elevation in II, III, AVF

Reciprocal ST depression in V4, V5, V6, I, AVL

Complete heart block

-> Large inferior MI with bradycardia

Outline your immediate management [5 marks]

Move to resus

Continuous ECG monitoring

Address ABC

Oxygen

Morphine / diamorphine

GTN spray

Aspirin and either Clopidogrel or Plasugrel

Reperfusion therapy as per local arrangement – PCI vs thrombolysis

LMWH

Prepare for transcutaneous pacing

During PCI, his coronary circulation was found to be “left-dominant”. What does this mean?

The posterior descending artery (which supplies the posterior / inferior myocardium) is supplied by the circumflex artery (20% of people have this, in the remainder it is supplied by the RCA.)

## Question 20

Describe the clinical features that are shown. [4 marks]

Right periorbital bruising

Right eye traumatic mydriasis

Loss of upward gaze in right eye

Red right eye / scleral injection

What is the diagnosis? [2 marks]

Orbital floor blow-out fracture with inferior rectus entrapment / 3rd cranial nerve involvement

What is the definitive investigation? [1 mark]

CT or MRI scan of the facial bones

Which associated injuries should be excluded? [3 marks]

Any 3 of:

Infraorbital nerve injury

Head injury / c-spine injury

Ocular injury (including globe rupture)

Optic neuropathy

III, IV, VI nerve palsy

Injury to the ophthalmic branch of the trigeminal nerve