MARKING SHEET Q 1

1.

VT

2.

Broad complex QRS

Tachycardia rate approx 180

Presence of capture beats

3.

Cardiac Ischaemia

Electrolyte – hypokalaemia, hypomagenesemia

Drug – eg tricyclics

Primary arrhythmia

Congenital

Cardiomyopathies

Infiltrative diseases

(3 of 4 to pass)

4.

Sedate – fentanyl 25mcg boluses, midazolam 0.5 – 1mg boluses

Synchronized DC cardioversion – 100 – 200J

Correct underlying cause

Total pass 8/14 – corrects to 5.5/10

MARKING SHEET Q 2

Each difficulty ½ mark

½ mark for each of 2 acceptable solutions with extra ½ for specific consultant level answers

PASS MARK – 6/8

1. Difficulty: hypotension

Solution: optimise haemodynamics pre-intubation – IV fluid boluses N/S 1000mL, bolus metaraminol 0.5mg, aiming for systolic >90mmHg

Difficulty: hypoxia

Solution: optimise pre-oxygenation, high flow nasal prongs in addition to BVM with tight seal, bag pt though apnoeic period

Difficulty: difficult intubation due to obesity

Solution: positioning – ramp position (head up), 1-2 pillows under head, have backup intubation equipment ready – bougie, LMAs, large laryngoscopes

Difficulty: difficulty ventilating pt

Solution: well sedated and paralysed once intubated, head up to unload diaphragm, airway adjuncts, ensure peak pressure limits, backup equipment, prepared for surgical airway if needed

Difficulty: difficult BVM

Solution: use of airway adjuncts – Guedels, nasopharyngeal airways, optimise position (as above),

*** one mark per identified problem

One mark for a sensible solution

Q2.

	YOUR SETTING
FiO2	**1.0**
Respiratory rate	**Something sensible – (14 – 25)**
Tidal volume	**Something sensible – (350 – 500 mL)**
Positive end-expiratory pressure	5 – 10cmH2O
Peak pressure limit	**35 – 40cmH2O**

Pass 4/5

Total pass 10/13 corrects to 7.5/10

MARKING SHEET Q 3

1.

Decreased level consciousness

Not initiating own breaths

Vomiting

Large haemoptysis

Facial abnormalities

Pt intolerance

Not appropriate level of care

** 3 of above to pass

*****nb change to 2 marks**

Each response ½ mark, pass 1.5/2

2.

Acute on chronic respiratory acidosis – raised CO2, acidaemia indicates acute, but pH not low enough for CO2 to be solely acute – therefore chronic process with chronic metabolic compensation

Metabolic compensation – raised HCO3 and BE, chronic process

2/4 to pass

3.

Increase iPAP - to increase TV and hence ventilation – to remove CO2

Increase FiO2 or increase PEEP – to improve O2 (accept either but not both)

2/2 to pass

5.5/8 to pass corrects to 6.5/10

MARKING SHEET Q 4

Cause Retained products of conception / placenta

Examination incomplete placenta, non-contracted uterus

Management OT for manual removal, oxytocin

Cause uterine atony

Examination non-contracted uterus

Management uterine massage, oxytocin, empty bladder

Cause trauma – vaginal/cervical laceration

Examination direct inspection / speculum examination shows laceration

Management surgical correction

Cause uterine rupture

Examination severe abdominal tenderness

Management surgical correction in OT

Cause uterine inversion

Examination visual inspection of perineum shows inverted uterus, fundus too low

Management uterine re-location - OT

Cause coagulopathy

Examination no other cause obvious, blood not clotting

Management correct coagulopathy with blood products

PASS 12/18 corrects to 6.5/10

MARKING SHEET Q 5

1. **(trans-scaphoid) Peri-lunate dislocation, scaphoid fracture**
2. **Median nerve injury, vascular compromise**
3. **Consent – 1 mark**
   Preparation – cardiac monitor, IV access *2 (one each arm – below fracture)
   Cuff – inflate to 100mmHg above systolic BP
   LA – prilocaine 2.5mg/kg
   (Manipulate fracture and plaster) – not essential in this question
   Cuff to stay up at least 30min (CRITICAL ERROR) – 1 mark
   Deflate cuff and observe 15 min for toxicity

   Q3 – ½ mark for concept, extra ½ mark for specifics
   Pass Q3 – 3/6

   Total pass – 7/10

MARKING SHEET Q 6

1. Grade 3 **antero-posterior compression** fracture of the pelvis (right side)

Pass 1

2. Pelvic binder, interventional radiology, pelvic packing in OT, ORIF in OT

Pass any 3 out of 4

3. Minimal volume resuscitation

Targets: systolic BP 80mmHg, radial pulse, mentation

Use blood products, minimal crystalloid

Initially O neg then Xmatched

Initiate massive transfusion protocol early

Aim packed cells:FFP:platelets 1:1:1 ratio

(targeted to ROTEM acceptable)

Each point 1 mark but has to show clinical reasoning

Pass 3/5

Total pass 7/11 corrects to 6/10

MARKING SHEET Q 7

1. Consciousness – agitated, drowsy
   Marked increased work breathing
   Silent chest
   Inability to talk
   Tachypnoea
   Tachycardia
   Hypotension
   Hypoxia

   Pass 5/6

2. Oxygen via mask to keep sats >92%
   Salbutamol nebs 2.5 - 5mg continuous
   Ipratropium 250mcg times 3 nebs in first hour
   Steroid IV – methypred 1mg/kg or hydrocortisone 4mg/kg
   Salbutamol IV – 5-10mcg/kg bolus then infusion

   Also accept MgSO4 – 50mg/kg bolus then infusion
   Also accept aminophylline – 10mg/kg loading dose

   1 mark for complete treatment with correct dose

   Pass 3/5

3. Ketamine 1-2mg/kg
   Sux 1-2mg/kg

   Also accept other variations that seem sensible

   Pass 2/2

   Total pass 10/13 corrects to 7.5/10

MARKING SHEET Q 8

1.

Multiple lesions of different sizes

Discrete lesions, no confluence

Erythematous macules

Target lesions with central clearing **(CRITICAL TO PASS)**

Distribution over anterior right arm and forearm and anterior right side of thorax shown

Child appears well perfused

Pass 3 out of 4

2.

Erythema multiforme

Pass 2

3.

Drugs – sulphur antibiotics, anticonvulsants, NSAIDs, cephalosporins

Infectious – mycoplasma, HSV, other viruses eg EBV, fungal infections

(no other groups acceptable)

Mark out of 6 not 8

1 mark for each group with ½ mark for each agent

Pass 3 of 6

Total pass 8/12 corrects to 6.5/10

MARKING SHEET Q 9

1.

Duty of care

- Have a physical condition causing behavioural disturbance
- Be at risk to himself or others

Mental Health Act

- Suspected mental health disorder
- No less restrictive means available

1 mark for each principle, 1 mark for each condition

Pass 4/6

2.

Verbal de-escalation

Oral sedation eg diazepam 10mg

Show of force

Physical restraint – isolation or with manual handling

Chemical restraint eg droperidol 10mg

Pass 3 of 5

3.

Hep B 30-60%

Hep C 3%

HIV 0.3%

(accept answers that are close)

Pass 2 of 3

Total pass 9/14 corrects to 6/10

MARKING SHEET Q 10

1.

Accept complaint

Apologize for inconvenience

Undertake to investigate

Assure mother she will get response

(other responses may be acceptable)

Pass 2 of 4

2.

Recall / review chart

Discuss with treating doctor

Inform medico-legal team institution

Medico-legal for treating practitioner

Identify problems causing missed diagnosis

Implement changes to prevent further similar problems

(quality improvement cycle)

(accept other reasonable responses)

Pass 3 of 5

3.

Pt factors – unusual presentation

Staff factors

- Lack of knowledge
- Lack of experience
- Lack of supervision

Process factors

- Understaffed
- Busy shift
- Lack of protocols surrounding discharge by junior doctor

(accept other reasonable responses)

Pass 3 of 6

Total pass 8 of 15 corrects to 5/10

MARKING SHEET Q 11

1.

Moderately severe acidaemia – pH decreased 7.18

Metabolic acidosis – reduced HCO3 and BE

High anion gap 34 – Diabetic ketoacidosis, other possible causes renal failure, lactic acidosis

Appropriate respiratory compensation – pCO2 reduced

Na corrected for glucose is approx. 151 – elevated suggesting total body water loss / dehydration

K is elevated but when corrected for pH is likely to be approx. 4.7 which is in normal range

Cl reduced to maintain electrical neutrality in face of excess anions

Glucose elevated in DKA

Pass 6 of 8

2.

Diabetic ketoacidosis exacerbated by pneumonia

Pass 2 of 2

3.

Insulin infusion 0.1U/kg/hr

IV fluid – initial bolus 20ml/kg N/S, then replace deficit plus maintenance over 24hrs

IV antibiotics – benzylpenicillin 60mg/kg and roxithromycin 4mg/kg

K replacement – add 20-40mmol/L to fluids when K below 4.5 -5.0

Dextrose – add 5% dextrose to N/S when glucose below 12-15

(must have

Pass 3 of 5

Total Pass 11/15 corrects to 7/10

MARKING SHEET Q12

1.

Broad QRS – between 160-200ms **(CRITICAL)**

Terminal right axis deviation of QRS

Absolute QT prolonged about 480ms

Pass 2 of 3

2.

Tri-cyclic anti-depressants

Pass 1

3.

Terminate seizure

– midazolam 2.5mg aliquots

Serum alkalinisation aiming for pH 7.5 (2 steps below so 4 marks)

Intubate

- – ketamine 100mg, rocuronium 100mg

IV HCO3

- – initial bolus 100mmol

IV N/S bolus

– 1000mL repeat if needed, for systolic BP >90mmHg (MAP >65mmHg)

Noradrenaline infusion if needed for BP goal

(3% saline if refractory hypotension, aiming for Na 150)

1 mark for each concept, 1 mark for action details

Pass 6 of 10

Total pass 9/14 corrects to 6/10

MARKING SHEET Q 13

1.

Large extradural haematoma – high density bi convex lesion left temporal region

Hyperacute extradural with “swirl sign” mixed density

Large scalp haematoma left temporal region

Parietal cerebral contusion left

Significant midline shift to right

Loss of sulci and gyri consistent with raised intracranial pressure

Pass 3 of 5

2.

Immediate neurosurgical referral for surgical drainage of haematoma

Intubation for airway control and management of CO2

Maintain MAP >80 (accept approx.) mmHg with IV N/S +/- noradrenaline infusion

Maintain oxygenation sats >95%

Ventilate for low normal CO2 (35 – 40)

Other neuroprotective measures (max 4 marks)

- Well sedated, paralysed
- Slightly head-up position
- Loosen ties / restriction to venous return
- Na high normal range
- Normothermia
- normoglycaemia

pass 5 of 9

total pass 8 of 14 corrects to 5.5/10

MARKING SHEET Q 14

1.

- severe tongue oedema occupying most of mouth, with tongue protrusion

- oedema and erythema peri-orbital regions

- pt looks pale

Pass 1 of 2

2.

- anaphylaxis

    Angio-oedema of tongue causing threatened airway

    Cardiovascular compromise

Pass 2 of 2

3.

Stridor

Hypoxia / cyanosis

Increased work of breathing

Fatigue (decreased GCS)

Pass 2 of 3

4.

IV fluid

Normal saline 1L bolus (20mL/kg) repeat if needed, aiming for systolic >90mmHg or MAP >65mmHg

Adrenaline

Stat IM 500mcg, repeat Q 5min if needed

If deteriorating, IV boluses 50mcg

Infusion start at 5-10mcg/min

Aiming for – systolic as above, reduction in angio-oedema

1 mark for concept, 1 mark for details

Pass 3 of 4

Total pass 8/11 corrects to 7/10

MARKING SHEET Q 15

1.

Tone

Breathing

Heart rate

Pass 3 of 3

2.

Stimulation

No pass

3.

BVM – if not breathing after stimulation

CPR – if HR less than 60 despite initial BVM

Intubation – prolonged CPR

Adrenaline 10-30mcg/kg – ongoing HR <60 despite BVM and initial CPR

IV fluid – 10mL/kg – ongoing HR <60 despite BVM and CPR

(accept some form of IV/IO access)

1 mark for concept, 1 mark for reasoning

Pass 6 of 8

Total pass 9/12 corrects to 7.5/10

MARKING SHEET Q 16

1.

Sigmoid volvulus – massively dilated loop of sigmoid colon with axis pointing to LIF **(CRITICAL)**

LBO – dilated large bowel proximal to volvulus with no gas distal (ie rectum)

1 mark for each diagnosis, 1 mark for explanation

Pass 2of 4

2.

Per rectal tube decompression

Laparotomy

Conservative (ie no management)

Percutaneous drainage initially

Pass 2 of 3

3.

Analgesia – IV opiate morphine 1-2mg aliquots, fentanyl 10-20mcg aliquots

IV fluid – N/S 20ml/kg boluses to correct shock then maintenance fluid titrated tom UO

Communication – explanation to pt/ substitute decision maker

1 for each concept 1 for explanation

Pass 2 of 4

4.

Pt competence to make decisions

Presence of advanced health directive

NOK wishes if pt not competent

Baseline level of function

Pass 2 of 3

Total pass 8/14 corrects to 5.5/10

MARKING SHEET Q 17

1.

Right sided tension **haemothorax (CRITICAL)**

- Veiled opacity to right hemi-thorax
- Significant rim of fluid around lateral lung edge
- Mediastinal shift to left

1 mark for haemothorax, ½ marks for – tension, 3 other bits
pass 2 of 3

2.

Verbal consent / explanation

(sedation optional)

(Gown / gloves / mask / goggles)

Clean chest with anti-septic (appreciate this is a time critical procedure)

Local anaesthesia – lignocaine 1% with adrenaline 20mL

Location - 5th interspace mid-axillary line

Incision with scalpel

Blunt dissection to pleural space / finger sweep

Insertion ICC 28-32 Fr

Connection to underwater seal

Suture and dressing

Pass 7 of 9

Total pass 9/12 corrects to 7.5/10

MARKING SHEET Q 18

1.

Haemodynamic instability

Definite onset AF within 24-48 hours

Lack of known structural heart disease

Non-chronic AF

Correctable or no clear precipitant

Pt preference

Pass 2 of 4

2.

Flecainide 2mg/kg – known LV dysfunction, intra-ventricular blocks (eg BBBs)

Amiodarone 300mg – iodine allergy, hypotension, thyroid dysfunction, long QT

Sotalol 40 – 80mg – long QT, asthma, hypotension

1 mark drug, 1 mark dose, 1 mark each contra-indication

Pass 5 of 8

3.

Metoprolol 2mg aliquots ,max 20mg

Verapamil 2.5-5mg aliquots, max 20mg

Digoxin initial loading dose 500mcg

1 mark for drug, 1 mark for dose

Pass 4 of 6

4.

Either CHADS2 or CHA2DS2-Vasc score

No pass

Total pass 11/19 corrects to 5.5/10

MARKING SHEET Q 19

1.

Heat stroke (exposure)

Sepsis – meningitis

Hyperthyroidism

(DDx must address severe hyperthermia)

Pass 2 of 3

2.

Serotonin toxicity – hyper-reflexia, muscular rigidity, mydriasis etc

Anti-cholinergic syndrome – dry skin, flushed, mydriasis, delirium etc

Sympathomimetic toxicity – tachycardia, dilated pupils, hypertension etc

Neuroleptic malignant syndrome – rigidity, hypertension, CNS

1 mark for causes, 1 mark for each finding

Pass 7 of 12

3.

Remove clothing

Fans with mist

Ice packs to axillae / groins / neck

Cold IV fluids – 4 degrees N/S

Cold bladder irrigation

Pass 3 of 4

Total pass 12/19 corrects to 6/10

MARKING SHEET Q 20

1.

Cloudy cornea

Mid-sized pupil

Ciliary injection, especially laterally

Pass 2 of 3

2.

Acute angle closure glaucoma

Pass 2 of 2

3.

Early ophthalmological review - laser

IV acetazolamide

Topical pilocarpine to constrict pupil

Topical apraclonidine

Topical beta blocker

Pass 2 of 3

4.

Analgesia

Anti-emetic

Pass 1 of 2

Total pass 7/10

MARKING SHEET Q 21

1.

Solitary lesion left upper zone

- Round / oval shaped
- Has a defined wall / discrete lesion
- Contains air/fluid level

= **cavitating lesion (1 mark)**

½ mark for others

Pass 1.5 of 2

2.

No surrounding consolidation

No evidence chronic lung disease

No hilar lymphadenopathy obvious

No pneumothorax

No effusion

Pass 2 of 3

3.

Infection/abscess – bacterial (Strep / Staph / Gram neg), fungal, TB

Malignancy – primary bronchogenic, metastasis

Granuloma – rheumatoid, Wegeners

Infarction – trauma, PE

1 mark for each cause, ½ mark for each agent

Pass 3 of 6

Total pass 6.5/11 corrects to 5.5/10

MARKING SHEET Q 22

1.

Spinal cord compression / cauda equine compression – tumour, abscess, haematoma

Transverse myelitis

Traumatic spinal cord injury

Spinal cord infarct – embolic/thrombotic

Myopathies – eg myasthenia gravis

Electrolyte – hypoK periodic paralysis

Toxins – tick paralysis, botulism

Pass 4 of 6

2.

Symmetrical ascending weakness

Loss of reflexes

Minimal sensory loss

Pass 2 of 3

3.

LP – raised CSF protein with raised WCC

Nerve conduction studies – consistent with peripheral demyelination

Anti-ganglioside antibodies – raised

(will accept MRI – no spinal cord pathology found)

(also C. jejuni serology - positive)

Pass 2 of 6

4.

Respiratory failure – monitor FVC regularly

Autonomic dysfunction – cardiac monitoring, regular BP measurement

Pass 2 of 4

Total pass 10/19 corrects to 5/10

MARKING SHEET Q 23

1.

Lisfranc injury (1 mark)

- Widened space between first and second metatarsals indicating ligamentous disruption (1 mark) **CRITICAL 1 of these 2**

Laterally dislocated base second metatarsal with avulsion fractures (fracture/dislocation) (1 mark)

Transverse fracture first metatarsal mid-shaft (1 mark)

- Distracted

Oblique fracture neck 2nd metatarsal (1 mark)

Pass 3 of 5

2.

Vascular injury – dorsalis pedis

Foot compartment syndrome

Pass 2 of 2

3.

Analgesia

Short leg plaster

Elevation

Ice

Urgent orthopaedic involvement

Pass 4 of 5

Total pass 9/12 corrects to 7.5/10

MARKING SHEET Q 24

1.

Activate hospital disaster plan

Notify hospital executive team

Call in extra staff – medical / nursing / other

Clear the ED

- Discharge those who can be
- Send pts to the ward who are waiting admission
- Clear the waiting room as well as possible

Create a triage area

Assemble teams

Gather extra resources likely to be required (plaster, antibiotics, analgesia etc)

Ready inpatient teams

- Surgical
- Orthopaedic
- Blood bank
- Anaesthetics
- Theatre staff
- Radiology

(I'm sure there are plenty of other things I couldn't think of)

Pass 5 of 8

2.

Staff fatigue

Staff rotation

Exhausted stocks eg antibiotics, splints, sutures

Communication systems overloaded / non-functional

Overloaded radiology services

Overloaded pathology services

Limited access to timely OT

Pt identification and tracking

(probably some more)

Pass 3 of 6

Total pass 8 of 14 corrects to 5.5/10

MARKING Q 25

1.

(accelerated) Junctional rhythm, rate 75/min, axis normal

Pass 3 of 3

2.

Inferior STEMI – ST elevation II, III, aVF, reciprocal depression lateral leads (I, aVL)

Probable R sided involvement – STE III>II

ST depression V1 – V5 – reflects possible posterior involvement or else this too is reciprocal

Pass 2 of 3

3.

Fluid load – IV N/S 500mL, aiming for BP >90mmHg

Analgesia – IV morphine aliquots 2.5mg

Aspirin 300mg

Clopidogrel (or other) 300-600mg

Heparin bolus 4000-5000U

Urgent consultation with interventional cardiologist to arrange PCI for reperfusion

(Marking all or nothing ie must have step and dose correct (no ½ marks))

Pass 4 of 6

Total pass 9/12 corrects to 7.5/10

MARKING SHEET Q 26

1.

Hx organ failure – heart, renal, liver – causes hypervolemic hypoNa

Drug history – drugs that cause SIADH, diuretics

Mental health history – drugs that cause SIADH, water intake for psychogenic polydipsia

Intercurrent illnesses – eg sepsis, pancreatitis, gastroenteritis– causes of hypovolemic hypoNa

Malignancy – SIADH

(other things may ne acceptable)

Pass 3 of 5

2.

Urea/creat – renal failure

BSL – cause of dilutional hyponatremia

TFTs- hypothyroidism

CXR – lung malignancy – SIADH

LFTs – liver failure

Urine Na – elevated in SIADH >20-40

Serum K – for typical low Na / high K ratio in Addison's disease

(1 mark for test plus reason no ½ marks)

Pass 3 of 5

3.

Midazolam / diazepam 5mg bolus aiming to terminate seizure, repeat if needed

3% saline bolus – approx. 2mL/kg bolus aiming for seizure termination and small rise in Na (about 5)

1 mark for drug, 1 mark for rest

Pass 2 of 4

TotAL PASS 8/14 corrects to 5.5/10

MARKING SHEET SAQ Q 27

1.

Likely neutropenia based on recent chemo – use local protocol eg pip/taz + gentamicin

Non neutropenic – Hx and Ex to localise infection for guided treatment

Presence of infected line – use vancomycin as well

Pt allergies eg penicillin – use ceftazidime

Results of Ix – targeted Abs for likely source

Results of previous Ix – resistant organisms – may need to use different Abs eg meropenem

Pass 3 of 5

2.

End-points are pulse <100, BP >90 systolic, MAP >65mmHg, good end-organ perfusion

IV fluids – bolus N/S 1000mL, repeat if needed, stop when CVP reaching >12cm H2O (or some other reasonable endpoint)

Insert CVL and arterial line if not-responsive to fluid and need for inotropes

Noradrenaline infusion start at 5mcg/min via CVL – increase aiming for MAP >65mmHg

Broad spectrum Abs – pip/taz 4.5g, gentamicin 5-7mg/kg, vancomycin 30mg/kg loading dose

1 mark for end-points, 1 mark for each step with details (no ½ marks)

Pass 4 of 5

Total pass 7/10

MARKING SHEET SAQ Q 28

1.

Severe hyperkalaemia – cellular shift due to metabolic acidosis, renal failure, cell death with rhabdo

High anion gap metabolic acidosis – renal failure, lactic acidosis lost likely

Renal failure – urea/creat less than 100 – suggests intrinsic renal failure – most likely due to rhabdo

1 mark for each process, 1 mark for explanation (no marks for just saying X is high or Y is low)

Pass 4 of 6

2.

Rhabdomyolysis due to prolonged period on floor following sedative overdose

(accept compartment syndrome)

1 mark for rhabdo, 1 mark for why

Pass 1 of 2

3.

Ca gluconate (membrane stabilisation) – 20mL 10%

Intra-cellular shift

- Serum alkalinisation (hyperventilation and HCO3) aim pH high normal
- Insulin / dextrose – 10U/50mL 50%
- Salbutamol – 5mg nebs via ETT

Removal

- NG resonium 30g

(consider dialysis in refractory cases)

Pass 3 of 4

Total pass 8 of 12 corrects to 6.5/10

MARKING SHEET Q 29

1.

Dilated loop of large bowel with telescoping segment – intussusception

Pass 2 of 2 (1 mark for intuss 1 mark for description)

2.

Analgesia – IV morphine aliquots 1mg (2 marks)

IV fluid bolus – N/S 20ml/kg (approx. 340mL) aiming for pulse <120, cap refill <2-3s (2 marks)

Urgent referral to paediatric surgical centre (1 mark)

Pass 3 of 5

3.

Gas insufflation PR – radiological procedure – for uncomplicated cases, first line management

Surgical correction – for failure of gas reduction, for complicated cases ie perforation

1 for option 1 mark for when

Pass 2 of 4

4.

Perforation / sepsis

Intestinal ischaemia

Must have 1 of these , others may be acceptable

Pass 1 of 2

Total pass 8 of 13 corrects to 6/10

MARKING SHEET Q 30

Seriously, I've had enough. Pretty much anything sensible will do here…

Pass 8 of 15 corrects to 5/10

TOTAL PASS MARK 189.5/300