Answers book

PAH SAQ Trial exam 2018.1

Guide for marking

- Answers are a rough guide only

- They have not been prepared with the same rigorous oversight as the questions

- There will be many acceptable answers that have not been included in the answer template

- Use your judgement to identify critical errors of omission or commission

- pass mark is given after question number

- items in bold are essential to score a pass for that Q – ie 50% of the mark for that Q

First book	76/114
Second book	77/114
Third book	78/114
Total	231/342

Q1 (17 /23)

1.

- **Left thoracostomy / ICC insertion** – for clinical or radiological evidence of pneumothorax or haemothorax
- ED thoracotomy – for cardiac arrest if signs of life in last 10 minutes
- Blood administration – if inadequate mentation / radial pulse / systolic below 80mmHg
- Intubation – if agitation impairing management, if hypoxic, if arrest or significantly depressed level consciousness

2.

Left sided pneumothorax (accept tension – rib spaces are widened)

3.

- visible lung edge

- rim of lucency aroung lung edge

- widened rib spaces on left

- deep sulcus sign

4.

- pericardial tamponade – pericardial fluid on FAST, raised JVP

- intraperitoneal haemorrhage – intra-peritoneal fluid evident on FAST scan, tender abdomen

5.

- extra-thoracic placement – ensure finger has entered thoracic space and guided passage of ICC

- damage to intercostal vessels / nerve – ensure placement above rib not below

- lung laceration – finger sweep on entering thoracic cavity, not use trocar

- heart injury – avoid trocar, gentle insertion of ICC

- diaphragm / abdominal organ injury – ensure placement in triangle of safety, lowest 5^{th} interspace

- infection – full sterile technique

Q2 (7 /12)

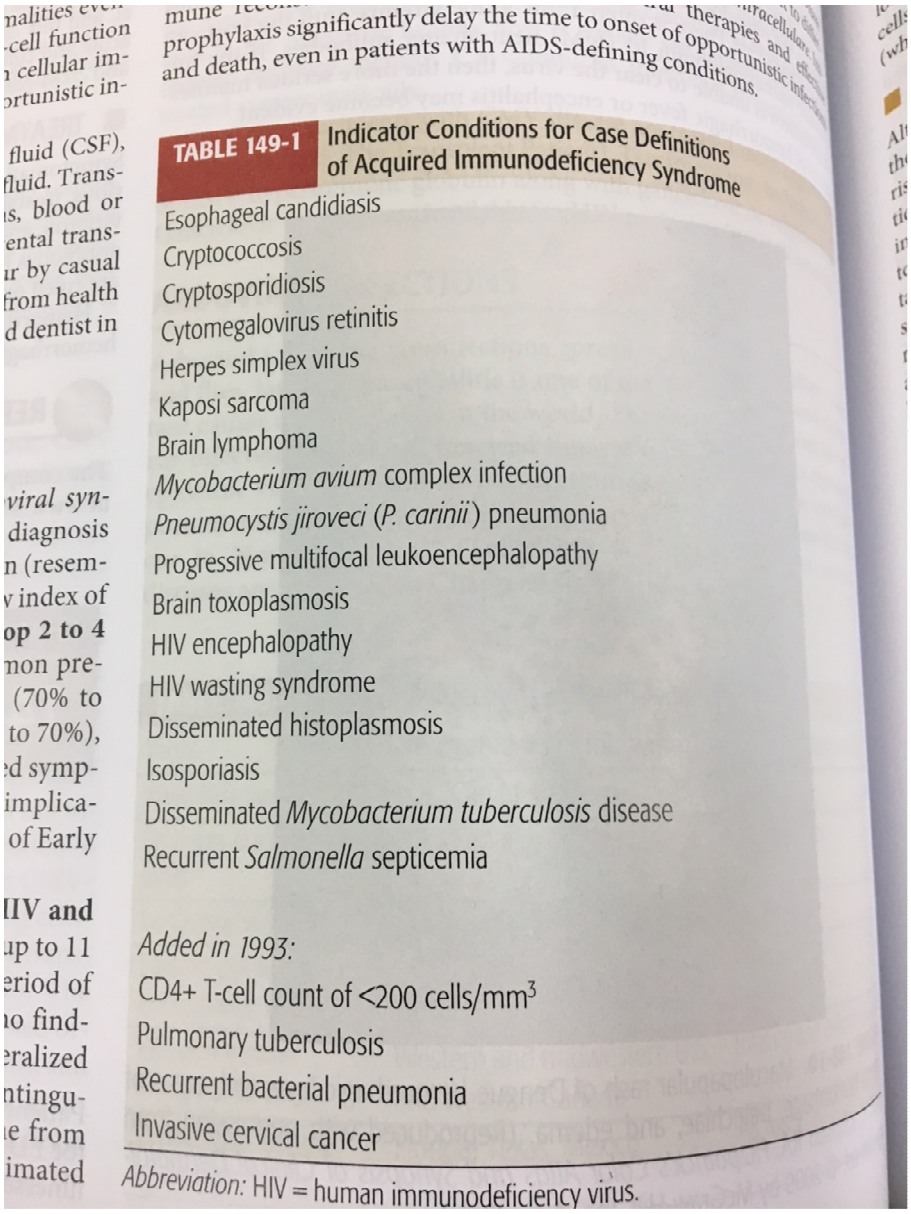
1.

CD4 count <200

Viral load >50 000

Also accept absolute lymphocyte count < 1200

2.



prophylaxis significantly delay the time to onset of opportunistic
and death, even in patients with AIDS-defining conditions.

TABLE 149-1 Indicator Conditions for Case Definitions of Acquired Immunodeficiency Syndrome

Esophageal candidiasis
Cryptococcosis
Cryptosporidiosis
Cytomegalovirus retinitis
Herpes simplex virus
Kaposi sarcoma
Brain lymphoma
Mycobacterium avium complex infection
Pneumocystis jiroveci (*P. carinii*) pneumonia
Progressive multifocal leukoencephalopathy
Brain toxoplasmosis
HIV encephalopathy
HIV wasting syndrome
Disseminated histoplasmosis
Isosporiasis
Disseminated *Mycobacterium tuberculosis* disease
Recurrent *Salmonella* septicemia

Added in 1993:
CD4+ T-cell count of <200 cells/mm^3
Pulmonary tuberculosis
Recurrent bacterial pneumonia
Invasive cervical cancer

Abbreviation: HIV = human immunodeficiency virus.

3.

Streptococcus pneumonie – benzylpenicillin, ceftriaxone

Mycoplasma pneumonie or other atypical – azithromycin

Pneumocystis jiroveci – Co-trimoxazole

Also accept Mycobacterium tuberculosis – and any TB drug

Q3 (6 /9)

1.

Previous ectopic

IVF

Hx PID

Hx tubal surgery

IUD

2.

Less than 1500 may not see intra-uterine gestation at this early stage, so both ectopic and intra-uterine gestation possible if USS does not identify intra-uterine gestation, will need close follow up with repeat USS and HCG

More than 1500 Should see intra-uterine gestation, therefore if uterus is empty, then ectopic pregnancy is likely diagnosis, hence laparoscopy likely to be required

Q4 (8 /12)

1.

- target lesions

- erythematous macules

- central sparing

- various sizes

- some confluence right abdomen

2.

Erythema multiforme

3.

Mycoplasma pneumoniae

Viral eg HSV (need specific virus to get the mark)

TB

4.

Antibiotics eg sulphonamides, penicillins

Anticonvulsants eg phenytoin

NSAIDs

Haematological malignancies eg NHL, leukaemias

Physical factors eg cold, radiotherapy

5.

Conservative / symptomatic

Remove trigger

Q5 (8 /12)

1.

Tachycardia

AF

Hyper-reflexia

Thin habitus

Tremor

fever

2.

Primary hyperthyroidism	elevated	depressed
Secondary hyperthyroidism	elevated	elevated

3.

- Graves disease – eye signs eg exophthalmos

- thyroiditis – diffusely tender enlarged thyroid gland

- TMNG – large thyroid, irregular, lots of nodules

- toxic adenoma – unilateral lump in thyroid

Q6 (7 /11)

1.

Unreasonable behaviour that creates a risk to health and safety. Has to be repeated over time or occurs as a part of a pattern of behaviour.

2.

Direct bullying – behaviour that is overt and usually involves conduct directed at a person to belittle or demean them. Examples include:

 Aggressive and intimidating behaviour

 Belittling, degrading or humiliating comments

 Spreading misinformation or malicious rumours

 Interfering with a person's property or work equipment

 Displaying offensive material (e.g. pornography)

(2) **Indirect bullying** – behaviour that excludes or removes benefits from a person. Examples include:

 Assigning meaningless tasks unrelated to the job

 Setting tasks that are unreasonably below or beyond a person's skill level

 Deliberately changing work rosters to inconvenience particular employees

 Deliberately withholding information that is vital for effective work performance

3.

(scope of acceptable answers will be broad)

- Meet with trainee / listen
- Offer support person to be present
- Discuss with director of the department
- Document
- Arrange appropriate channels of complaint if necessary – HR, Worksafe etc
- Arrange appropriate work conditons eg shifts where appropriate until issue resolved

Q7 (7 /11)

1.

- scleral injection

- hypopyon

- irregular pupil

- cornea / anterior chamber cloudy

- chemosis

2.

Anterior uveitis / iritis

3.

Inflammatory bowel disease

Ankylosing spondylitis

Sarcoidosis

Psoriasis

Reiter syndrome

4.

Synechiae

Glaucoma

Cataracts

Retinitis

Band keratopathy

Also accept visual loss

Q8 (9 /13)

1.

Ventricular tachycardia

2.

Broad complex approx. 160ms

Regular tachycardia approx. 150/min

Fusion beats 4 and 7

Concordance across chest leads

3.

Ischaemia – signs on reversion ECG, Hx IHD, preceding chest pain

Electrolyte abnormality – hypoK on bloods

Drug toxicity – eg TCA ingestion

Primary arrhythmia – Hx cardiomyopathy eg ARVD

4.

Amiodarone 5mg/kg

Lignocaine 1mg/kg

Q9 (7 / 11)

1.

Salter Harris 1 injury distal radius

Dorsal displacement of epiphysis

Dorsal angulation

2.

Sensory loss palm lateral 3 ½ digits

Motor loss thumb opposition

Motor loss thumb abduction

3.

Explanation / consent with patient and parents

Analgesia – any options will be OK

Procedural sedation – eg ketamine 0.5mg/kg

Reduction of epiphysis either procedural sedation or in OT

Plaster – short arm plaster

Orthopaedic follow up – fracture clinic if reduced well

Q10 (14 /18)

1.

Reduced GCS

Focal neurological signs

On anti-coagulation

Signs BOS # or depressed skull fracture

Vomiting

amnesia

Anything else reasonable

2.

Acute on subacute subdural haematoma / haemorrhage

High attenuation anterior – acute blood

Iso-attenuation – subacute blood

Loss of sulci left hemisphere – raised ICP

3.

ECG – look for arrhythmogenic cause of fall

Coag – exclude coagulopathy which would require correction

Platelet count – exclude as exacerbating factor – correct if low

Accept other causes of fall – Na, urine

Accept other consequences of fall if justified – CXR, c-spine, pelvis

Q11 (11 /18)

1.

Infero-lateral STEMI

2.

ST elevation inferior (II, III, aVF) and lateral leads (V5 V6)

ST depression V1 – V3 posterior STEMI

Reciprocal depression I aVL

Sinus bradycardia ~55/min

STE III>II c/w RV infarction

3.

IV fluid bolus N/S 500mL to improve preload RV

Urgent cardiology referral for rescue angioplasty given failed reperfusion

Analgesia – IV morphine 2.5mg aliquots for pt comfort

4.

Consent / explanation

Place pads – AP or antero-lateral

Sedation / analgesia (reasonable agents / doses)

Set **demand** pacing rate 60-80, current enough to get capture

Ensure electrical and mechanical capture

Q12 (8 /12)

1.

Adhesions – previous abdominal surgeries, abdominal scars

Herniae – presence of inguinal or other herinia on exam

Malignancy – known Hx malignancy, wt loss

Stricture – Hx Crohns disease

2.

Ischaemia, Perforation – urgent surgery, antibiotics

Hypovolemia – IV fluid replacement

Electrolyte abnormalities eg hypokalaemia – replace K

Others may be OK

Q13 (7 /11)

1.

R hydronephrosis

R perinephric fat stranding

Small stone R VUJ

2.

Urine micro – to exclude UTI which would require a stent

Urea, creatinine – determine whether significant renal failure

x-ray KUB – determine whether radio-opaque for surveillance

serum urate – may point to hyperuricaemia as cause for urate stones

3.

- plan to be used when patient presents with symptoms of renal colic

- provide adequate analgesia eg IV morphine 2.5mg aliquots

- check urine to exclude UTI

- check renal function to exclude significant ARF

- manage symptomatically initially:

    If pain settles with above management and no UTI / ARF then discharge no imaging

    If pain not settling then USS first choice to exclude hydronephrosis

- CT unlikely to be indicated in the absence of hydronephrosis
- Involve Urology team prior to ordering CT scan

Q14 (7 /10)

1.

- Type of insulin – will affect duration of toxicity and observation
- Amount – will affect severity of duration of toxicity
- Multiple sites / one site – one site makes a depot with longer duration of release / toxicity
- Diabetic or not – affects how you wean glucose infusion

2.

- IV dextrose infusion – aiming for BSL above 3.5

- IV potassium infusion aiming for normal range

Q15 (7 /10)

1.

Abdominal aortic aneurysm

2.

Haemodynamic status – dangerous to transport a shocked patient to the CT scanner

Proximity to CT – more able to scan a sick patient if CT is in the resus room

Pre-surgical planning requirement – placing a stent requires good knowledge of pathology / anatomy of the patient, CT required for this option

Pt characteristics that would suggest palliation is the only suitable management

3.

Immediate vascular surgical referral for OT

Blood administration – 1 unit packed cells aiming for cerebral perfusion, radial pulse, systolic 80mmHg

Analgesia – small boluses – eg fentanyl 20mcg for comfort

Family / NOK meeting – high mortality in this situation

4.

OT – open repair

Endovascular stent

palliation

Q16 (9 /12)

1.

IV fluid 10-20mL/kg N/S aiming for pulse <160, BP maintain >85-90mmHg

IV dexamethasone 0.15mg/kg up to 10mg

IV ceftriaxone 50-100mg/kg

2.

Bacterial meningitis

3.

Predominantly neutrophilic raised WBC

High protein and low glucose

4.

Streptococcus pneumoniae

Neisseria meningiditis

Haemophilus influenza

5.

Blood cultures

Strep Ag – urine

Neisseria PCR – blood

CSF gram stain / culture

Q17 (7 /11)

1.

VBG – assess degree of hypoperfusion – lactate / base excess

Hb – will guide packed cell replacement

Coag – high chance of liver disease, will guide FFP therapy

Fibrinogen / Ca – also will require replacement if low to manage coagulopathy

BSL – pt likely to have a degree of liver failure, replace if needed

2.

Hb >70

INR <1.6

Plt >50

Fibrinogen >1.0

Ionised Ca normal range

Also accept normal ROTEM parameters

3.

Urgent endoscopy for variceal banding

IV octreotide 50mcg bolus, 50mcg/hr

IV antibiotics for gram neg cover – eg ceftriaxone 1g

Also accept prevention of alcohol withdrawal with diazepam

Q18 (7 /12)

1.

Start CPR – 15:2, 100/min

IV adrenaline 10mcg/kg

IV fluid bolus 20mL/kg N/S

Early intubation due to hypoxia being most likely problem, 100% O2

2.

Pros allows parents to be with child as is the usual preference

Helps with grieving

Cons can make caregivers feel uncomfortable

In extreme situations, parent might interfere with efforts

3.

Arrange time when all those who wish to be involved can be, ie rest of department must be covered

Allow people to express their concerns / grief

Emphasize no blame culture

Ensure team are aware of the poor prognosis from arrival of patient

Offer options for ongoing support

Offer time out where needed

Q19 (16 /24)

1.

Left midzone opacities (confluent, suggesting alveolar infiltrates)

Right mid zone opacification obliterating R cardiac silhouette

Kerley B lines (best seen in R lung field)

Small left effusion

2.

Differential Diagnosis	Further Investigations
CAP	Blood Cultures
	Sputum Culture
	Urinary Ag (others – NPA, CRP?)
Cardiac Failure	ECHO
	Troponin
	BNP Ultrasound for B-lines

3.

Respiratory acidosis – raised CO2 61, low pH

High anion gap metabolic acidosis - Low HCO3, raised AG 17, low pH

4.

AG Na – (Cl + HCO3) 17 most likely lactic acidosis due to cellular hypoperfusion

DG change AG:change HCO3 5:5 pure high AG met acidosis

A:a [FiO2*713 – pCO2/0.8] – pO2 very high means there is a significant shunt as many alveoli are not oxygenated – implies severe gas exchange problem

Q20 (7 /11)

1.

Carditis

Sydenham's chorea

Erythema marginatum

Rheumatic nodules

Arthritis

2.

System not enough doctors, too busy for adequate supervision of junior staff,

Process no policy for senior discussion of each case, lack of education around rheumatic fever in indigenous population

Individual junior doctor / inexperienced, any sort of personal problem

Q21 (8 /12)

1.

Threats of violence

Active thought disorder

Inability to follow commands

Current intoxication

History of violence

Evidence of significant self-harm

Lots of others acceptable

2.

Diazepam 10mg oral prn

Ketamine 20mg aliquots prn, or infusion

Droperidol 10mg IM

3.

Avoid air transport altogether – ground transport

Employ police / security to travel with pt

Intubate for transfer / general anaesthesia

Q22 (7 /11)

1.

Tibial plateau fracture

Comminuted

Both lateral and medial condyles involved

Lateral displacement of knee

Head of fibula comminuted fracture

2.

Schatzker 6

3.

Popliteal artery dissection / injury – loss of dorsalis pedis pulse, leg cold, painful

Common peroneal nerve injury – foot drop, sensory dorsum foot

Posterior tibial nerve injury – loss plantar flexion, loss sensation sole of foot

Compartment syndrome – extreme pain, tense compartment , loss neurovascular function

Also accept 1 of major ligament injury with appropriate exam finding

Q23 (9 /11)

1.

a. **BSL – potential reversible cause seizures**
b. Na+ - cause of seizures in setting heat stroke
c. ECG to exclude hyperkalaemia, other arrhythmias
d. CK degree of rhabdomyolysis (renal function also ok)
e. K+ rhabdo and possible renal failure in heat stroke
f. CT head – intracranial haemorrhage as a complication of seizures

2.

4.5

13cm

Ketamine 1mg/kg, propofol 0.5 - 1mg/kg

Suxamethonium 1-2mg/kg, rocuronium 1.2mg/kg

3.

Remove clothing

Water spray and fans

Cold IV fluid

Cold fluid bladder lavage

Cooling blanket

Q24 (8 /12)

1.

Bilateral epistaxis

Large amount of posterior nasopharyngeal blood

Bleeding not controlled with anterior techniques

Hx nasopharyngeal malignancy

Hx recent surgery nasopharynx

2.

Direct pressure on anterior nares

Cold/ ice pack to nose

Direct cautery

Anterior packing with pre-made pack eg merocel tampon or “rapid rhino”

Anterior and posterior packing

Interventional radiological embolization

OT with ENT

3.

Ability to control bleeding with initial basic measures ie need for correction on INR

Actual INR – supra-therapeutic more likely to correct

Risk of complication due to correction ie metallic valve try to avoid correction unless necessary due to risk of stroke

Need to re-institute anti-coagulation quickly – avoid vit K if need to restart warfarin quickly eg metallic valve

Q25 (8 /11)

1.

C4/5 bilateral facet joint dislocation

2.

Pre-vertebral soft tissue swelling in front of C5

Anterior listhesis C4 on C5 >50% vertebral body

Loss posterior spinal line

Bilateral perched facets

Widened space between C4/5 spinous processes

3.

Hypoventilation / respiratory failure – intubate and ventilate, aim CO_2 normal

Neurogenic shock – IV N/S boluses and noradrenaline infusion aiming for MAP >65mmHg

Hypoxia due to aspiration lung injury – intubate, high FiO_2 aiming for pO_2 >60mmHg

Q26 (8 /12)

1.

Unconjugated hyperbilrubinaemia: raised bili, low fraction conjugated

Hepatocellular pattern ALT and AST > GGT and ALP consistent with hepatitis

Low albumin probably due to liver synthetic dysfunction, also maybe acute phase response due to inflammation

2.

Paracetamol toxicity

Alcohol

NASH

Autoimmune

Ischaemic hepatitis

3.

Hepatitis serology A,B,C – for cause of hepatitis (max 1 mark)

Paracetamol level – for cause, treatment for this is available

BSL – hypoglycaemia in fulminant synthetic dysfunction

Coags – synthetic dysfunction

Autoimmune markers – for diagnosis

Electrolytes – low Na common complication of liver disease

USS abdomen – define liver architexture eg cirrhosis, exclude portal vein thrombosis

Q27 (7 /10)

1.

Vital signs – shocked child from any cause esp sepsis, congenital heart problems, urgent resuscitation may be required

Weight, length, head circumference – to plot on growth chart and compare with birth

Fontanelle – raised ICP eg from NAI would have bulging fontanelle

Chest exam – looking for pulmonary oedema or other respiratory dysfunction that would impair feeding

CVS – murmurs / hepatomegaly / coarctation

Jaundice – at this age would indicate serious pathology eg biliary atresia

Bruising – NAI

Many other reasonable answers

2.

BSL – hypoglycaemia in metabolic conditions, sepsis

ECG – tachyarrhythmias can present as failure to thrive

VBG – assess degree of hypoperfusion – eg lactate / metabolic acidosis

Bilirubin / LFTs – esp if jaundiced – exclude congenital liver problem

FBC – anaemia from congenital haemolytic cause

Septic screen – urine / CXR / LP where indicated from examination to exclude infection

Urine for metabolic screen – where suggested by hx or metabolic acidosis

Others OK