

Peer Teaching Society Phase 4 SAQ Paper 3 2024 - [ANSWERS]



Marking Instructions

- There is **no identified 'pass mark'**
- Each question should state the **number of marks** it is worth and what needs to be answered to obtain the mark
- This paper is out of **200 marks**

Disclaimer

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Please **do not share** this document on **google drives** or **directly to future students** as this takes away from their opportunity to complete this paper in the run up to their exams when it will be of most benefit as a revision resource. **This paper will be edited, updated and repeated in future years.**

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Summary of Topics Assessed:

Q1	Infection	Infectious Mononucleosis
Q2	Cardiology	Hypertension
Q3	Acute & Emergency	Anaphylaxis
Q4	Paediatrics	Pyloric Stenosis
Q5	Endocrinology	Cushing's Syndrome
Q6	Neurology	Multiple Sclerosis
Q7	Sexual Health	Gonorrhoea
Q8	Ophthalmology	Acute Angle Glaucoma
Q9	Orthopaedics	Carpal Tunnel Syndrome
Q10	General Surgery	Acute Cholangitis
Q11	Neurology	Traumatic Brain Injury
Q12	Obstetrics	Gestational Diabetes
Q13	Renal	Kidney Stones
Q14	Respiratory	Pneumothorax
Q15	Paediatrics	Jaundice / Development Dysplasia of Hips
Q16	Haematology	Lymphoma
Q17	Gynaecology	PCOS
Q18	Renal	Nephritic Syndrome
Q19	Psychiatry	Postpartum Psychosis / Depression
Q20	Public Health	Data Interpretation

QUESTION 1

Yan is a 19 year old university student, who presents with a 8 day history of persistent sore throat and general malaise. He has now developed a widespread erythematous rash. 2 days ago he took some antibiotics he had left over at home. You suspect a diagnosis of infectious mononucleosis

a. Give 2 clinical signs you may find on examination [2 marks]

Any 2 of:

- Splenomegaly
- Petechial haemorrhages covering of soft palate
- Whitish exudate covering tonsils
- Lymphadenopathy
- Hepatomegaly
- Fever

b. What is the causative organism for this condition [1 mark]

Epstein Barr Virus

c. What is the mode of transmission for this condition [1 mark]

Salivary exchange

d. What test would confirm the diagnosis? [1 mark]

Monospot test

e. Give 2 complications of this condition? [2 marks]

Any 2 of:

- (Post-Viral) Chronic Fatigue Syndrome
- Splenic Rupture (*esp if engaging in contact sports*)
- Guillain Barre Syndrome
- Encephalitis
- Meningitis
- Severe upper airway obstruction (*due to tonsil enlargement/ abscess*)
- Pericarditis / Myocarditis / Cardiac conduction abnormalities
- Hepatitis

(note that the question asks for complications of infectious mononucleosis, not EBV in general)

f. What antibiotic do you expect Yan took? [1 mark]

Ampicillin / Amoxicillin

(cephalosporins / tetracyclines / macrolides can cause a rash in context of infectious mononucleosis too, although the best answer would be as above more strongly linked)

g. Infectious mononucleosis is not a notifiable disease. Name 2 diseases that should be reported, as per the Health Protection (Notification) Regulations 2010 [2 marks]

Any 2 of:

Acute encephalitis	Leprosy
Acute infectious hepatitis	Malaria
Acute meningitis	Measles
Acute poliomyelitis	Meningococcal septicaemia
Anthrax	Monkeypox
Botulism	Mumps
Brucellosis	Plague
Cholera	Rabies
COVID-19	Rubella
Diphtheria	Severe Acute Respiratory Syndrome (SARS)
Enteric fever (typhoid or paratyphoid fever)	Scarlet fever
Food poisoning	Smallpox
Haemolytic uraemic syndrome (HUS)	Tetanus
Infectious bloody diarrhoea	Tuberculosis
Invasive group A streptococcal disease	Typhus
Legionnaires' disease	Viral haemorrhagic fever (VHF)
	Whooping cough
	Yellow fever

NB: the question asked for diseases not organisms

[10 marks]

QUESTION 2

Mr Jones is a 60 year old man who comes to see you in the Well Man clinic. He has no symptoms and urine dipstick testing is negative. He has no past medical history. His blood pressure is 150 systolic, 98 diastolic.

- a. What would be your initial approach to this blood pressure result? [1 mark]
Measure it again in clinic / offer ambulatory BP monitoring / home BP recording
- b. Which class of antihypertensive should be offered first line? [1 mark]
Calcium channel blocker
- c. If Mr Jones had type 2 diabetes mellitus, which class of antihypertensive should be offered first line? [1 mark]
Angiotensin-converting enzyme (ACE) inhibitor / Angiotensin-II receptor blocker
- d. When diagnosing hypertension, the GP should always assess for target organ damage. Name two investigations the GP could carry out. [2 marks]
Any 2 of:
- Urine albumin:creatinine ratio
 - Test for haematuria
 - HbA1c
 - U&Es / electrolytes, creatinine and eGFR (test for CKD)
 - Examine the fundi (for presence of hypertensive retinopathy)
 - 12 lead ECG (assess cardiac function & detect LVH)
- e. What is the target blood pressure that Mr Jones should aim for at the next clinic appointment? [1 mark]
<140/90 mmHg
(slightly higher target of <150/90 mmHg in >80 years old)
- f. What scoring system can be used to assess his risk of having a heart attack or stroke in the next 10 years? [1 mark]
QRISK3 / QRISK
- g. Specialist evaluation of secondary causes of hypertension should be considered in patients under what age (regardless of symptom status)? [1 mark]
In patients <40 years
- h. Name 2 secondary causes of hypertension [2 marks]
Any 2 of:
- | | |
|--|-------------------------------------|
| - Chronic kidney disease / CKD | - Acromegaly |
| - Chronic pyelonephritis | - Hypothyroidism/ Hyperthyroidism |
| - Diabetic nephropathy | - Alcohol |
| - Glomerulonephritis | - Ciclosporin / Corticosteroids / |
| - Polycystic kidney disease | Erythropoietin / NSAIDs / ADHD |
| - Obstructive uropathy / enlarged prostate | medication / Venlafaxine |
| / BPH | - Combined oral contraceptive / HRT |
| - Renal cell carcinoma | - Cocaine |
| - Coarctation of the aorta | - Liquorice |
| - Renal artery stenosis | - Pregnancy |
| - Primary hyperaldosteronism | - SLE |
| - Pheochromocytoma | - Retroperitoneal fibrosis |
| - Cushing's syndrome | - Obstructive sleep apnoea |

[10 marks]

QUESTION 3

Ted is a 21 year old who had been eating at a new Indian restaurant when he suddenly developed a swollen tongue and shortness of breath. Hospital monitoring demonstrates hypotension and tachycardia. You suspect he is having an anaphylactic reaction.

- a. **Name one difference between stridor and wheeze. [1 mark]**
Stridor occurs when there is obstruction in the upper airway, wheeze occurs when there is obstruction in the lower airway / stridor more likely heard on inspiration and wheeze on expiration
- b. **What is the mechanism of an anaphylactic reaction? [2 marks]**
Type 1 hypersensitivity reaction
Where IgE stimulates mast cells to rapidly release histamine / mast cell degranulation
- c. **Into what position should Ted be encouraged and why? [2 marks]**
Flat with legs raised
To maximise venous return to the heart

You decide that Ted requires adrenaline

- d. **What dose should be given? [1 mark]**
500 micrograms of 1:1000 concentration / 500 micrograms of 1mg/mL concentration
- e. **After how long should a second dose be given, if there is an inadequate response to the first? [1 mark]**
5 minutes
- f. **If there is no response after two doses, who should be involved with caring for this patient and why? [2 marks]**
Critical care / resuscitation team / senior support
So IV adrenaline can be given
- g. **Once Ted stabilises, what blood test should be performed? [1 mark]**
Serum mast cell tryptase

[10 marks]

QUESTION 4

You are the paediatric SHO working in A+E and your next patient is a 6 week old baby boy, George, who has been brought in by his very distressed mother. She tells you that he has been violently vomiting after feeding and is not putting weight on like her other children did.

- a. Name your top differential diagnosis [1 mark]
Pyloric Stenosis
- b. What is the pathophysiology behind this condition? [2 marks]
Hypertrophy of the pylorus prevents food travelling from the stomach into the duodenum as normal
After feeding, there is powerful peristalsis against the narrow pylorus causing food to be ejected into the oesophagus leading to projectile vomiting
- c. Name the most likely finding upon palpation of the abdomen and where in the abdomen you would expect to find it? [1 mark]
Olive-shaped mass in the right upper quadrant / hard mass in the right upper quadrant (*finding and location both needed for 1 mark*)
- d. You decide to do a blood gas on George. What clinical picture would you expect? [1 mark]
Hypochloremic, hypokalemic metabolic alkalosis (*all needed for 1 mark*)
- e. What is your investigation of choice for this condition? [1 mark]
Abdo US
- f. What is the definitive management of this condition? [1 mark]
Laparoscopic pyloromyotomy / Ramstedt's pyloromyotomy
- g. Name one complication of this treatment [1 mark]
Any 1 of: risk of infection / bleeding / damage to nearby structures eg duodenum / bowel perforation / persistence of symptoms / incomplete pyloromyotomy / need for further operation / incisional hernia / mucosal perforation / adhesions / wound dehiscence / aspiration / apnoea / postoperative vomiting / chest infection / postoperative ileus / death
- h. Following successful treatment, your consultant tells you to remind mum that George's 8 weeks vaccinations will be due soon. One of these is the 6 in 1 vaccine. Name 2 conditions which this vaccine helps to protect against [1 mark]
Any 2 of: Diphtheria / Hepatitis B / Whooping Cough / Tetanus / Polio / H influenzae B
- i. Name the other 2 vaccinations which George will receive at this time [1 mark]
Rotavirus / MenB (*both needed for 1 mark*)

[10 marks]

QUESTION 5

Dave is a 46 year old man who is being investigated for Cushing's syndrome, a disorder relating to the adrenal glands.

a. Complete the table below [4 marks]

Part of the Adrenal Gland	Hormone Secreted
Zona glomerulosa	Aldosterone
Zona fasciculata	Cortisol
Zona reticularis	Androgens
Medulla	Adrenaline / Noradrenaline

b. What is the pathological basis of Cushing's disease? [2 marks]

(Endogenous) secretion of ACTH (1 mark)
from a pituitary adenoma (1 mark)

c. Name 2 symptoms, and 2 signs that he may have presented with [2 marks]

Symptoms:

(1 mark for 2 correct answers)

- (central) weight gain
- Acne
- Hair growth
- Thin skin / easy bruising
- Depression
- Psychosis
- Insomnia
- Muscular weakness
- Bone pain
- Amenorrhoea / oligomenorrhoea
- Poor libido
- Growth arrest in children
- Polyuria / polydipsia

Signs:

(1 mark for 2 correct answers)

- Facial plethora / facial redness
- Moon face
- Hypertension
- Buffalo hump
- Central obesity
- Glycosuria
- Oedema
- Thin skin / bruising
- Hirsutism
- Acne
- Poor wound healing / skin infections
- Striae
- Pigmentation
- Osteoporosis / pathological fractures
- Proximal muscle wasting

An overnight suppression test is organised for Dave to screen for Cushing's syndrome.

d. What blood test does he need, and what time of the day should it be done? [2 marks]

(Serum) cortisol

9am / between 8am and 10am

[10 marks]

QUESTION 6

A 32 year old woman presents to A+E with a deterioration in her vision in her right eye over the last 48 hours with pain when looking up and down. She also reports some difficulty seeing certain colours.

- a. What is the most likely diagnosis? [1 mark]
Optic Neuritis
- b. What would you expect to find when conducting the 'swinging light test'? [1 mark]
Relative afferent pupillary defect
- c. What treatment should be initiated to treat this? [1 mark]
High dose steroids
NB - must state high dose to receive mark

Upon further questions, she states that this is the third time this has happened this year. She also describes some shooting electric shock pains which travel down her spine and legs when she moves her neck sometimes.

- d. What sign is she describing? [1 mark]
Lhermitte's sign
- e. What is the most likely underlying diagnosis? [1 mark]
Multiple Sclerosis
- f. Which cells in the CNS are damaged in this condition? [1 mark]
Oligodendrocytes
- g. What criteria would be used to confirm this diagnosis? [1 mark]
McDonald criteria
- h. What choice of imaging should be used for this and what would you expect to see on CSF analysis? [2 marks]
MRI
Oligoclonal bands in the CSF
- i. What is the most common form of this condition? [1 mark]
Relapsing-Remitting

[10 marks]

QUESTION 7

Victoria is a 21 year old university student with altered vaginal discharge. She has had 8 male sexual partners in the last 6 weeks and barrier contraception has not been used consistently. She was alerted by one of the partners to attend a sexual health clinic for gonorrhoea testing.

A full history is taken and Victoria is then asked to swab inside her vagina with 2 different swabs.

- a. The first swab is a NAAT swab, what does this test for? [1 mark]

Chlamydia and gonorrhoea (both needed for 1 mark)

- b. The second swab is a high vaginal charcoal media swab, name 4 infections that this can test for [2 marks]

bacterial vaginosis, trichomonas vaginalis, candida and Group B streptococcus (0-1 correct answers = 0 marks; 2-3 correct answers = 1 mark; 4 correct answers = 1 mark)

- c. Fill in the table below: [3 marks]

Sexually Transmitted Infection	Causative Bacterium
Gonorrhoea	<i>Neisseria gonorrhoeae</i>
Chlamydia	<i>Chlamydia trachomatis</i>
Syphilis	<i>Treponema pallidum</i>

- d. Name 3 signs / symptoms that would indicate Victoria has developed pelvic inflammatory disease? [3 marks]

Any 3 of:

- Lower abdominal pain / pelvic pain*
- Deep dyspareunia*
- Postcoital bleeding / intermenstrual bleeding / menorrhagia*
- Lower abdominal tenderness / adnexal tenderness*
- Cervical motion tenderness*
- Fever*

- e. If Victoria also presented with stiff, painful, swollen knees and ankles, what diagnosis should be considered, excluding septic arthritis? (1 mark)

(Sexually acquired) reactive arthritis

(<https://www.bashguidelines.org/media/1274/sara-2021.pdf>)

[10 marks]

QUESTION 8

You are a FY1 on A&E. You see the case notes for Sally, a 59 year old female who has presented with a painful red eye.

After talking to Sally, you discover that this pain came on whilst watching Mr Bean's Holiday on TV in a dark room. She also states that she is feeling quite sick and has vomited. On examination, you find a hard red eye with a hazy cornea and reduced visual acuity. You suspect acute angle closure glaucoma.

a. Give 2 other causes of an acutely painful red eye [2 marks]

Any 2 of:

- Anterior uveitis
- Scleritis
- Corneal abrasion / corneal ulcer
- Keratitis
- Foreign body
- Chemical injury
- Traumatic injury
- Endophthalmitis

b. What is the pathophysiology that underlies this condition? [4 marks]

The iris bulges forward and seals off the trabecular meshwork from the anterior chamber

This prevents aqueous humour from draining

Increasing the ocular pressure

Which further exacerbates the angle closure, and places pressure on the optic nerve

c. Whilst waiting for urgent ophthalmology review, name 1 simple measure you could take to make Sally more comfortable [1 mark]

Any 1 of:

- Antiemetic
- Analgesia
- Lie Sally flat on her back without a pillow (attempt to push lens back with gravity to relieve the block)

d. What does tonometry measure? [1 mark]

Intraocular pressure

e. A medication called Timolol may be prescribed for Sally. How does it work? [1 mark]

Reduce production of aqueous humour

f. What is the definitive surgical management of this condition? [1 mark]

Laser iridotomy

[10 marks]

QUESTION 9

Dina is a 50 year old lady who presents with troublesome symptoms in her right hand for the last few months, namely pain and tingling. She has no other problems with her joints and otherwise feels well. You suspect a diagnosis of carpal tunnel syndrome (CTS).

a. Name 2 features of the pain associated with CTS [2 marks]

Any 2 of:

- Worse at night
- Gradually worsening
- Intermittent
- Relieved by shaking hand

b. Which nerve is affected in CTS and what are the nerve roots? [2 marks]

Median, C6-T1

c. Why is sensation usually preserved over the palm in this condition? [2 marks]

The palmar cutaneous branch of the median nerve does not pass through the carpal tunnel

d. Tapping lightly on Dina's wrist elicits the pain and tingling she has been experiencing. What test is this a positive finding in? [1 mark]

Tinel's

e. CTS is often idiopathic but can be associated with other conditions or risk factors. Name 3 of these. [3 marks]

Any 3 of:

- Pregnancy
- Menopause
- Obesity
- Repetitive strain injury / vibrational power tools / tendinopathy
- Inflammatory arthropathy / rheumatoid arthritis
- Osteoarthritis (osteophytes)
- Ganglion cysts
- Previous wrist fractures / trauma
- Diabetes mellitus
- Hypothyroidism
- Acromegaly
- Smoking

[10 marks]

QUESTION 10

You have been asked to clerk Dune, a 45 year old woman who has presented with pain in her right upper abdomen. You establish that the pain came on around 8 hours ago after finishing a Friday night fish and chips takeaway. She has tried to sleep it off but the pain has become too intense, hence coming to hospital. She has had pain in this area before but it has never been this severe and would only last an hour.

- a. You wonder if Dune has cholangitis. What is the classical triad seen in this condition and what are the symptoms? [2 marks]

Charcot's triad: RUQ pain, fever, jaundice

- b. What initial imaging can be done to investigate the cause? [1 mark]

Abdominal ultrasound

- c. The registrar agrees with your diagnosis of cholangitis. Dune looks increasingly unwell. She is showing a temperature of 39.2°C, a blood pressure of 90/40 and a heart rate of 120 bpm. What multi-step management should be carried out immediately? [3 marks]

(0-1 correct answers = 0 marks; 2-3 correct answers = 1 mark; 4-5 correct answers = 2 marks; 6 correct answers = 3 marks):

- Blood cultures
- Measure urine output / catheterisation
- IV fluid challenge
- (broad spectrum) IV antibiotics (as per trust guideline)
- Measure lactate
- Give oxygen

The team successfully stabilises Dune and she is listed to undergo endoscopic retrograde cholangiopancreatography (ERCP) the following day.

- d. A few days later Dune complains of severe epigastric pain which radiates to her back. What single blood test would help diagnose the most likely complication? [1 mark]

Amylase / Lipase

- e. What is the pathophysiology behind Mirizzi syndrome? [3 marks]

Common hepatic duct obstruction

Caused by extrinsic compression from an impacted stone

In the cystic duct or infundibulum of the gallbladder

[10 marks]

QUESTION 11

A 19 year old man has been in a fight outside a pub. He has received at least one blow to the left side of his head from a baseball bat. He localises and opens his eyes to pain. He is able to make sounds but has incoherent speech. You are concerned about an extradural haematoma.

a. What is his GCS score? [1 mark]

9

(Eyes: 2/4 as open to pain; Verbal 2/5 as incomprehensible sounds; Motor 5/6 as localises to painful stimuli)

b. What urgent investigation does he need [1 mark]

Non-contrast head CT (all needed for 1 mark)

c. What are the three components of the Cushing's reflex? [3 marks]

Hypertension, bradycardia, and an irregular breathing pattern

d. Describe 3 signs of an expanding EDH as it enlarges and before it ultimately results in coning [3 marks]

Any 3 of:

- Headache
- Nausea and vomiting
- Restlessness / agitation / drowsiness
- Slow slurred speech
- Papilloedema
- Ipsilateral sluggish dilated pupil which then becomes fixed / blown pupil
- CN III palsy / 'down and out' pupil
- Seizures
- Reduced GCS
- Abnormal respiratory pattern
- Abnormal posturing (initially decorticate and then decerebrate)

e. What is coning? [2 marks]

(Raised intracranial pressure causes)

Herniation of the cerebellar tonsils through the foramen magnum

Leads to compression to the brainstem

(and respiratory arrest)

[10 marks]

QUESTION 12

Chloe is currently pregnant for the first time. Pre-pregnancy, she was reasonably fit and well, although her BMI was 32 and she has hypertension. She is told she will need testing for gestational diabetes.

- a. Name 2 risk factors for gestational diabetes [2 marks]
BMI > 30
Previous macrosomic baby weighing 4.5kg or more
Previous gestational diabetes
First degree relative with diabetes
Family origin with a high prevalence of diabetes (South Asian, Afro-Caribbean and Middle Eastern)
- b. When will the screening for gestational diabetes take place? [1 mark]
24 – 28 weeks gestation
- c. If this woman had gestational diabetes in a previous pregnancy, when should screening for gestational diabetes take place? [1 mark]
As soon as possible after booking AND at 24-28 weeks
- d. What levels will indicate gestational diabetes? [1 mark]
Fasting ≥ 5.6 mmol/L
At 2 hours ≥ 7.8 mmol/L
- e. Name 2 foetal complications of gestational diabetes? [2 marks]
Any 2 of:
- Macrosomia / Shoulder dystocia / Obstructed/delayed labour
- Organomegaly (particularly cardiomegaly)
- Polycythaemia
- Polyhydramnios
- Preterm delivery
- Neonatal hypoglycaemia
- Transient tachypnoea of the newborn
- f. You see another woman in your clinic who has a history of type 2 diabetes for which she takes metformin and gliclazide who is now 8 weeks pregnant. What medication changes would you make? [1 mark]
Stop gliclazide AND start insulin
- g. What medication (including dose) would you advise all women with Diabetes Mellitus to take before trying to conceive? [1 mark]
5mg of Folic Acid
NB must state dose of 5mg to obtain mark
- h. What test must all pregnant women with established T2DM undergo during pregnancy to monitor for diabetes complications? [1 mark]
Retinopathy screening (at booking and at 28 weeks)

[10 marks]

QUESTION 13

Javid is a 44 year old doctor, who takes himself down to A&E with severe pain in his left side radiating down towards his groin, that has come on in waves. He also has some blood in his urine. He admits that sometimes he can go a full 12 hour shift on AMU without more than a few sips of water. When you ask what he thinks the problem is, he suggests renal stones.

- a. What is the most common composition of a renal tract stone? [1 mark]

Calcium oxalate

- b. Stones are most likely to impact in the narrowest parts of the urinary tract. What are the 3 naturally narrowed points? [3 marks]

Pelviureteric junction / where renal pelvis becomes ureter

Crossing the pelvic brim

Vesicoureteric junction / where the ureter enters the bladder

- c. Name 1 other differential for haematuria? [1 mark]

Any 1 of:

- Bladder cancer / renal cancer / prostate cancer
- BPH
- UTI / pyelonephritis / Schistosomiasis
- Trauma
- Radiation cystitis
- Glomerulonephritis / nephritic syndrome
- Henoch-Schonlein Purpura
- Instrumentation / iatrogenic / catheterisation / cystoscopy

- d. What is the gold standard imaging for diagnosis of renal stones? [1 mark]

CT of the kidneys, ureter and bladder

- e. What is the preferred management option for a large staghorn calculi, which fills the renal pelvis? [1 mark]

Percutaneous nephrolithotomy

- f. A complication of renal or ureteric stones is infection. Name the classic triad of symptoms that would indicate pyelonephritis? [1 mark]

Loin or flank pain, fever and nausea or vomiting

(rigors is also a common symptom, however not part of the classical triad)

- g. Another complication is a post-renal acute kidney injury (AKI). Name 2 other causes of of a post-renal AKI [2 marks]

Any 2 of: ureteric tumour / bladder tumour / cervical cancer / blood clots in the lower urinary tract retroperitoneal fibrosis / urethral stricture / BPH / prostate cancer / meatal stenosis / phimosis

[10 marks]

QUESTION 14

Karim is a 22 year old man, who is generally fit and well. He suddenly developed chest pain and became breathless whilst watching television and was brought in by ambulance to A&E. A portable chest x-ray is obtained, as below.



Case courtesy of Adam Eid Ramsey, MD, Radiopaedia.org, rID: 71579

- a. **What is the most likely diagnosis? [2 marks]**
Right-sided
Spontaneous pneumothorax (*'spontaneous' necessary for the mark*)
- b. **Name 3 clinical signs you would expect to find on respiratory examination [3 marks]**
- Increased resonance (on the right side)
 - Decreased breath sounds / absent breath sounds (on the right side)
 - Unequal chest expansion / reduced chest expansion (on the right side)

Over the next hour, Karim becomes increasingly breathless and distressed.

- c. **What complication do you need to consider? [1 mark]**
Tension pneumothorax
- d. **Name 2 clinical signs, other than those mentioned above, that would alert you to this complication? [2 mark]**
Tracheal deviation (away from the affected side / towards the left)
Worsening hypoxia
Tachycardic
Hypotensive
Distended neck veins
- e. **The registrar decides to insert a chest drain in the 'triangle of safety'. What are the 3 borders of this that she needs to locate? [2 marks]**
Pectoralis major, Latissimus dorsi, 5th intercostal space
(0 correct answers = 0 marks; 1-2 correct answers = 1 mark; 3 correct answers = 2 marks)

[10 marks]

QUESTION 15

You are called to review a 3 day old baby boy, Alfie, on the postnatal ward born via C-section at 39 weeks. You arrive at the ward and the mother tells you that his eyes have started to look a bit yellow. You examine him and suspect jaundice.

- a. What form of jaundice is this baby likely to have? [1 mark]
Physiological
- b. Name the other 2 types of jaundice seen in babies and name 1 cause for each of these [2 marks]
Pathological - ABO incompatibility, Rhesus disease, G6PD deficiency, Spherocytosis (1 mark for type + cause)
Prolonged - Biliary atresia, Hypothyroidism, Breast milk jaundice, Infection (1 mark for type + cause)
- c. What would be the first line treatment for this condition? [1 mark]
Phototherapy
- d. What is the serious complication of untreated neonatal jaundice that parents should be warned about? [1 mark]
Kernicterus

Alfie is treated for his jaundice and remains in the hospital for a further 3 days. Before he is discharged, you conduct his NIPE and notice clunking of his hips.

- e. Which special tests in the NIPE can detect signs of hip pathology? [1 mark]
Ortolani and Barlow tests
- f. What should you arrange for Alfie to have now? [1 mark]
US scan of hips
- g. What condition is this looking for? [1 mark]
Developmental Dysplasia of the Hip
- h. The NIPE is a form of screening examination. Name 2 criteria of the Wilson and Junger criteria for screening tests [2 marks]
Condition should be important
The natural, latent and declared stages, risk factors and disease markers should be understood
The disease should have a detectable, latent stage
The screening should be cost-effective and ongoing
There should be a simple, safe, precise and validated screening test
The test should be acceptable to the population
There should be a agreed policy on the diagnostic investigations of individuals with a positive test results
There should be an effective treatment or intervention for patients identified through early detection, with evidence of early treatment leading to better outcomes than late treatment
There should be an agreed policy on who to treat
Adequate facilities should be available for the screening and treatment

[10 marks]

QUESTION 16

A 24 year old male, Michael presents with a four week history of painless cervical lymphadenopathy. He denies any respiratory or coryzal symptoms. He has lost 6kg in weight over 2 months, has had drenching night sweats and generalised pruritus. He is a non-smoker. When asked about alcohol, he mentions that he felt 'particularly terrible' last weekend and the lumps in his neck became painful after a binge drinking session.

a. Name 2 differentials for neck lumps [2 marks]

- Lymphoma / Lymph node metastasis / Salivary gland tumour / Thyroid tumour / Lipoma
- Reactive lymphadenopathy / Lymphadenitis
- Sialadenitis
- Carotid body tumour
- Sarcoidosis
- Haematoma / Subcutaneous emphysema / Acute bleeding
- Thyroid Disease (Goitre)
- Cystic hygroma / Thyroglossal cyst / Branchial cyst
- Dermoid cyst / Simple cyst

b. What is the single most likely diagnosis? [1 mark]

Hodgkin's lymphoma

c. Name 2 risk factors for this diagnosis [2 marks]

HIV

EBV

Autoimmune conditions / rheumatoid arthritis / SLE / Sjogren's syndrome / sarcoidosis / immunosuppression

Smoking

Family history

Older age

d. Name 2 clinical signs that might be present [2 marks]

Splenomegaly

Hepatomegaly

Pallor (+ other signs of anaemia)

Fever

Purpura, easy bruising

Michael then goes on to have a biopsy. At this appointment, he tells you that he drinks 2 750ml bottles of 13% wine a week.

e. Calculate Michael's average number of units for the week [1 mark]

$(750 \times 2 \times 13) / 1000 = 19.5$

f. What is the name of the characteristic finding from biopsy in the most likely diagnosis? [1 mark]

Reed-Sternberg Cells

g. Which classification system is used to stratify patients with the most likely diagnosis? [1 mark]

Lugano (replaced the old Ann-Arbor)

[10 marks]

QUESTION 17

Katie is an 18 year old who presents to her GP concerned about her periods. In the past 12 months, she has had 7 periods. She takes no regular medication. Furthermore, she is upset as despite a healthy diet and regular exercise, she is struggling to lose weight. She is also unhappy with her skin, as she has lots of spots. You suspect Katie has polycystic ovarian syndrome (PCOS), so organise some blood tests and an ultrasound for her.

- a. Name 2 causes of primary amenorrhoea, and 2 causes of secondary amenorrhoea, excluding PCOS [4 marks]

Primary - any 1 of:

- GU malformation / imperforate hymen / transverse septum / absent vagina / absent uterus
- Hypothyroidism / hyperthyroidism / hyperprolactinemia (e.g. prolactinoma) / Cushing's syndrome
- Premature Ovarian Insufficiency - Turner's syndrome, gonadal agenesis, pelvic radiation, chemotherapy, autoimmune disease
- Functional hypothalamic amenorrhoea / anorexia nervosa / excessive exercise / stress
- Constitutional delay
- Müllerian agenesis
- Androgen Insensitivity Syndrome / Congenital Adrenal Hyperplasia / 5-alpha reductase deficiency
- Dysfunction of HPA axis = Kallman's Syndrome, infection/head injury, hypothalamic/pituitary tumours

Secondary - any 1 of:

- Pregnancy / lactation / menopause
- Chronic systemic illness / stress / weight loss / excessive exercise
- Premature Ovarian Insufficiency - Chemotherapy / radiotherapy / surgery, idiopathic early menopause, autoimmune.
- Hyperprolactinaemia (e.g. prolactinoma)
- Iatrogenic - contraceptives, antipsychotics
- Cushing's syndrome / adrenal insufficiency / thyroid disease / uncontrolled diabetes
- Androgen-secreting tumours
- Late onset CAH
- Uterine causes - cervical stenosis, Asherman's syndrome

- b. Name 2 blood tests recommended by NICE for the investigation of PCOS [1 mark]

Any 2 of:

- Testosterone
- Sex hormone-binding globulin / SHBG
- Luteinizing hormone / LH
- Follicle-stimulating hormone / FSH
- Prolactin (*may be mildly elevated in PCOS*)
- Thyroid-stimulating hormone / TSH

c. Which criteria system is widely used in the diagnosis of PCOS? [1 mark]

Rotterdam

d. Which medication is used first line for the management of acne in PCOS? [1 mark]

Combined oral contraceptive pill

e. Discuss the impact of PCOS on oestrogen and progesterone levels and how this relates to an increased risk of endometrial cancer [3 marks]

Women with PCOS ovulate infrequently so do not produce enough progesterone / produce less progesterone (*progesterone is released after ovulation from the corpus luteum*), but they continue to produce oestrogen.

Irregular menstruation means that the endometrial lining does not shed regularly.

This results in endometrial hyperplasia and increases the risk of endometrial cancer.

[10 marks]

QUESTION 18

58 year old Tina presents to A&E with haemoptysis. A full panel of bloods are performed and you notice abnormalities within her U&Es:

	Today	4 months ago (routine drug monitoring)	Reference Range
Sodium	133	140	133 - 146 mmol/L
Potassium	6.0	4.0	3.5 - 5.3 mmol/L
Urea	11	5.5	2.5 - 7.8 mmol/L
Creatinine	129.6	54	45 - 84 μ mol/ L

- a. According to her creatinine level, what stage of acute kidney injury does Tina have? [1 mark]

Stage 2

(2.0 - 2.9 x baseline = stage 2)

- b. You suspect that Tina has glomerulonephritis. List 2 features of nephritic syndrome [2 marks]

Haematuria / oliguria / mild proteinuria / fluid retention or oedema

- c. Assuming that the haemoptysis is related to her renal pathology, what is the most likely diagnosis? [1 mark]

Goodpasture syndrome / anti-glomerular basement membrane disease

- d. What serological finding is diagnostic in this condition? [1 mark]

Anti-GBM antibodies

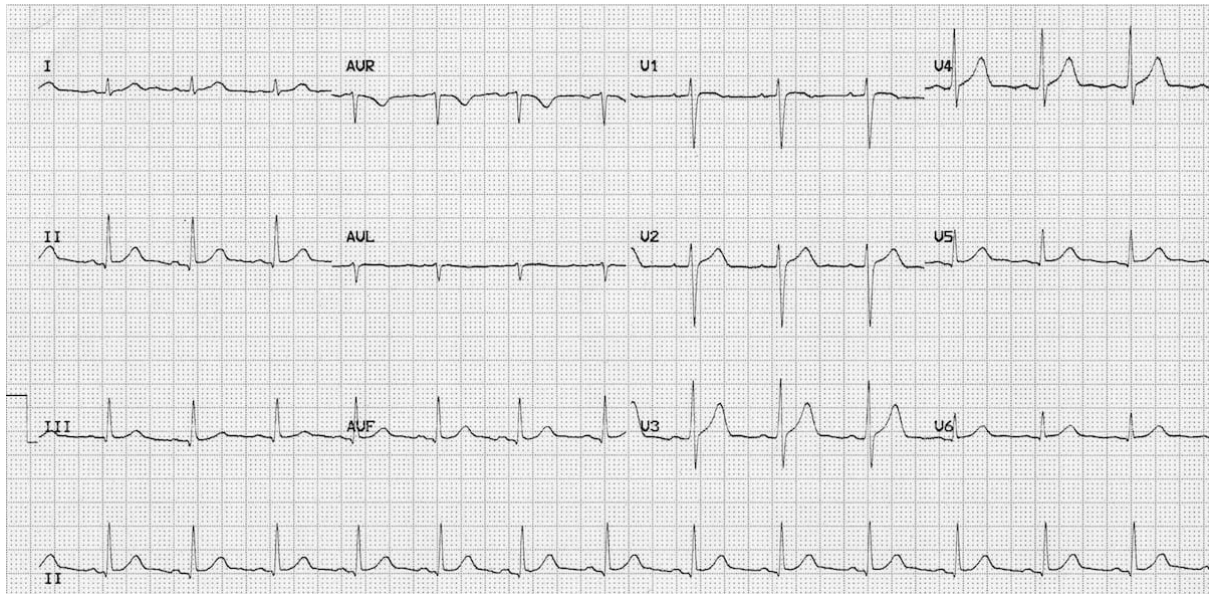
- e. Name 2 other causes of glomerulonephritis [2 marks]

- IgA nephropathy / Berger's disease
- Membranous nephropathy
- Membranoproliferative glomerulonephritis
- Post-streptococcal glomerulonephritis
- Rapidly progressive glomerulonephritis / crescentic glomerulonephritis
- Henoch-Schonlein purpura
- Microscopic polyangiitis / granulomatosis with polyangiitis
- Lupus nephritis

- f. How can a definitive cause be found in glomerulonephritis? [1 mark]

Renal biopsy

The hyperkalaemia found on Tina's U&Es prompted an ECG to be performed, as found below:



Life in the Fast Lane: Ed Burns and Robert Buttner: Mar 11, 2021, ECG library

g. What medication should be given first, in order to manage the hyperkalaemia, and what is the rationale behind this? [2 marks]

Insulin-glucose (10 units soluble insulin in 25g glucose) by intravenous infusion

To shift potassium into the cells

(NB hyperkalaemia not severe enough / no cardiac changes on ECG so no current need for IV calcium)

[10 marks]

QUESTION 19

Sandra is a 36 year old woman who recently gave birth to her first child (G2P1). Her partner Reggie has brought her to the GP after becoming concerned about her mental health since giving birth. He reports that Sandra's mood has been fluctuating to extremes frequently and this is very out of character. One hour she is withdrawn, anxious and low in mood, and the next she is restless, elated and talkative.

- a. Name one difference between baby blues and postnatal depression. [1 mark]

1 of:

Baby blues usually stops by 10 days after birth, whereas postnatal depression persists past 2 weeks.

Baby blue sx consist of mood swings up and down and bursting into tears easily/overreacting, whereas postnatal depression sx consist of typical depression sx such as low mood, poor sleep, anergia, lack of appetite.

- b. What questionnaire or scale could you use to screen for depression in postnatal women who are at risk of developing a mental health condition? [1 mark]

Edinburgh Postnatal Depression Scale or Patient Health Questionnaire (PHQ-9)

- c. The GP asks Sandra if she hears any voices, and she informs them that sometimes voices directly talk to her and she has conversations with them. Reggie also informs you that Sandra has shared with him on more than one occasion that she thought their baby was dangerous and would hurt her in her sleep. What specific types of psychotic symptoms is Sandra displaying? [2 marks]

Both:

Second person auditory hallucinations (all needed for mark)

Persecutory delusions (both needed for mark)

- d. The GP suspects Sandra is suffering from postpartum psychosis. Name 2 risk factors associated with developing postpartum psychosis. [2 marks]

2 of:

Previous postpartum psychosis

Family history of postpartum psychosis / psychosis / schizophrenia in a close relative

Bipolar disorder (type 1) / hx of affective mood disorder

Schizoaffective disorder / Schizophrenia

Discontinuation of psychiatric medications during pregnancy

Sleep deprivation

Negative pregnancy/birthing outcomes (fetal/infant death, preterm birth <32 weeks, congenital malformations)

- e. The GP decides to urgently refer Sandra to hospital, for her baby's and her own safety. Where in the hospital should she be treated? [1 mark]

Specialist Mother and Baby Unit.

- f. While in hospital, Sandra is started on Haloperidol, a first-generation (typical) antipsychotic. Name two side effects of first-generation antipsychotics. [2 marks]

2 of:

Extrapyramidal symptoms - dystonic reactions / pseudoparkinsonism (tremor, bradykinesia, rigidity) / akathisia / tardive dyskinesia.

Hyperprolactinaemia (galactorrhoea)

Sedation (Chlorpromazine, Promazine)

Anticholinergic effects (dry mouth, blurred vision, urinary retention, constipation, cutaneous flushing) Reduced seizure threshold

Impaired glucose tolerance

Prolonged QT interval

Weight gain / dyslipidaemia (more frequent side effects with second-generation antipsychotics)

Postural hypotension (Chlorpromazine)

Neuroleptic Malignant Syndrome

Abnormal LFTs / Neutropenia

Photosensitivity (Chlorpromazine)

May be associated with increased VTE and pneumonia risk

- g. Unfortunately, the psychiatry team find that Sandra's psychosis is not well managed on Haloperidol, or on Risperidone, a second-generation antipsychotic. They decide to start her on Clozapine instead. On Clozapine therapy, patients must be monitored with monthly blood tests - what is monitored? [1 mark]

White blood cell count / full blood count / leucocytes

[10 marks]

QUESTION 20

A screening test is designed for malaria aimed at early detection and intervention. A study was conducted to evaluate the accuracy of the screening test in identifying individuals with malaria.

The study employed a cross-sectional design, recruiting participants from the local community. Participants underwent the new screening test for malaria, as well as confirmatory testing using standard, existing methods.

Out of the 1000 participants screened, the screening test identified 250 individuals as positive for malaria. Among those, 180 were confirmed positive. Additionally, of the 750 participants who tested negative on the screening test, 30 were later diagnosed with malaria on confirmatory testing.

True positive: 180 ; True negative: 720 ; False positive: 70 ; False negative: 30

- a. Calculate the positive predictive value for the new screening test [2 marks]

$$180 / 250 = \underline{0.72 / 72\%}$$
$$TP / TP + FP$$

- b. Calculate the negative predictive value for the new screening test [2 marks]

$$720 / 750 = \underline{0.96 / 96\%}$$
$$TN / TN + FN$$

- c. Calculate the sensitivity of the new screening test [2 marks]

$$180 / 210 = \underline{0.857 / 85.7\%}$$
$$TP / TP + FN$$

- d. Calculate the specificity of the new screening test [2 marks]

$$720 / 790 = \underline{0.911 / 91.1\%}$$
$$TN / FP + TN$$

- e. Name 1 strength and 1 weakness of cross-sectional studies? [2 marks]

Strengths - any 1 of:

- Relatively quick / cheap
- No long periods of follow-up
- Multiple outcomes and exposures can be studied
- Can be used for large data sets

Weaknesses - any 1 of:

- Not suitable for rare diseases
- Not suitable for diseases with a short duration
- Difficulty to assess if exposure or outcome came first / may be reverse causality
- Unable to measure incidence

[10 marks]

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Google Form: <https://forms.gle/8wgJrF6ge3WqAsKP8>



We hope you found this paper beneficial for your learning. Good luck for your exams!

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