MLA AKT Practice Paper Exam

Part 1

The MLA AKT Exam Board has put together a 200-item practice exam (2 x 100 item papers) to help medical students prepare for the UK Medical Licensing Assessment Applied Knowledge Test (MLA AKT). Blueprinted to the GMC Content Map this exam has been designed to reflect the style and type of question that students will encounter.

The practice exam comes with and without the answer options.

We hope students will find this a valuable resource.

Should you have any questions about the clinical content of the practice exam please speak to the Assessment Lead in your school in the first instance.

1. A 79 year old woman has had a fall at home. She lives with her son and is dependent for shopping and finances. She has osteoarthritis and mild cognitive impairment.

   She has bruises of different colours on her upper arms and torso. She avoids eye contact and becomes distressed when her son answers questions on her behalf. When spoken to alone, she says that she is 'a burden' and is frightened of being sent to a care home.

What is the most appropriate next step in management?

A. Arrange home visit follow up by GP
B. Discuss concerns with the son and seek his explanation
C. Make an adult safeguarding referral
D. Refer to falls prevention service
E. Request psychiatric assessment for capacity

Correct Answer(s): C

Justification for correct answer(s): This presentation raises serious concern for elder abuse, including physical and psychological abuse and possible coercive control. Red flags include unexplained bruising of different ages, dependency on a caregiver, fearfulness and restricted communication. The immediate priority is patient safety through an adult safeguarding referral. Confronting the potential perpetrator or arranging routine follow up risks further harm. Capacity assessment and falls prevention may be needed later, but should not delay safeguarding action.

2. A 29 year old man has 4 weeks of occasional painless rectal bleeding.

The perianal area and rectal examination are normal. Proctoscopy shows internal haemorrhoids, but no evidence of thrombosis.

Which is the most appropriate initial management?

A. Fibre supplementation
B. Rubber band ligation
C. Sclerotherapy
D. Topical corticosteroids
E. Topical nitrate

Correct Answer(s): A

Justification for correct answer(s): The patient has uncomplicated haemorrhoids which can be managed conservatively with dietary modification.

3. An 80 year old woman has 18 months of a slowly progressive decline in short-term memory, with no clear onset. She often repeats herself and forgets conversations. She is less interested in going out and recently failed to recognise a nephew she had not seen in a few years. She has a history of mild hypertension and takes amlodipine and atorvastatin. Her daughter now visits her every day to help with cooking and medications.

Neurological examination is normal. Her Montreal cognitive assessment score is 22/30.

What is the most likely diagnosis?

A. Alzheimer dementia
B. Depression
C. Frontotemporal dementia
D. Mild cognitive impairment
E. Vascular dementia

Correct Answer(s): A

Justification for correct answer(s): She clearly has evidence of cognitive impairment. However, it is now impacting on her ability to look after herself and she needs help with ADLs. Her condition therefore is more severe than MCI and is a dementia process. Alzheimer is the most common form of dementia. FT dementia often has a more aggressive presentation with behavioural and language problems early on. Vascular dementia is possible, especially with the background of HTN, but this appears to be a slowly progressive presentation, not step wise. However, brain imaging should be performed. Depression or pseudodementia is possible but in this context where functional ability has been so severely affected you might expect a worse performance on cognitive testing.

4. A 45 year old man has breathlessness on exertion and chest tightness for 3 months. He has a daily cough productive of white sputum first thing in the morning. He is a smoker of 20 cigarettes per day since the age of 18. He is using his salbutamol inhaler multiple times per day. He agrees to smoking cessation referral.

Spirometry is shown:

	Pre bronchodilator	Post bronchodilator
FEV	2 L (57%)	2.4 L (69%)
FVC	4 L (80%)	4.2 L (79%)
Ratio	50%	57%

Which is the most appropriate inhaled medication to start?

A. Combination of long-acting β-agonist and corticosteroid
B. Combination of long-acting β-agonist and long-acting muscarinic antagonist
C. Corticosteroid
D. Long-acting ß2-agonist
E. Long-acting muscarinic antagonist

Correct Answer(s): A

Justification for correct answer(s): symptoms of daily cough with sputum in a smoker are consistent with chronic bronchitis in a smoker; however, there is evidence of reversibility on lung function with a 400 ml improvement in FEV1 post bronchodilator which is consistent with asthmatic features. This man has asthma/COPD overlap. The next step would be LABA/ICS
https://www.nice.org.uk/guidance/ng115/resources/visual-summary-treatment-algorithm-pdf-6604261741">visual-summary-treatment-algorithm-pdf-6604261741

5. A 38 year old woman has 2 days of right upper quadrant pain, vomiting and fever. She has had intermittent pain for the past 3 months, worse after eating. Her BMI is 34 kg/m^2.

Her temperature 38.1°C, pulse 102 bpm, BP 100/72 mmHg and oxygen saturation 98% breathing air. She has right upper quadrant tenderness, but no hepatomegaly, and her abdomen is soft with normal bowel sounds.

Investigations:
Alanine aminotransferase (ALT) 42 IU/L (10–50)
Albumin 37 g/L (35–50)
Alkaline phosphatase 165 IU/L (25–115)
Aspartate aminotransferase (AST) 35 IU/L (10–40)
Bilirubin (total) 21 µmol/L (< 21)
Amylase 192 U/L (<220)

What is the most likely diagnosis?

A. Acute pancreatitis
B. Biliary colic
C. Cholecystitis
D. Duodenal ulcer
E. Hepatitis

Correct Answer(s): C

Justification for correct answer(s): Symptoms and signs consistent with cholecystitis

6. A 28 year old woman has 4 weeks of retrosternal pain when swallowing liquids or solids. She has asthma, treated with inhaled beclometasone with formoterol.

Investigations:
Gastroscopy: patchy white exudate scattered along length of oesophagus

What is the most likely type of oesophagitis?

A. Candida oesophagitis
B. Cytomegalovirus oesophagitis
C. Eosinophilic oesophagitis
D. Herpes simplex oesophagitis
E. Reflux oesophagitis

Correct Answer(s): A

Justification for correct answer(s): Predominant odynophagia is usually due to infection, radiation or pills/drugs. The exudate and history of inhaled corticosteroid usage are suggestive of candida oesophagitis.

7. An 84 year old man presents to the ambulatory care unit following a fall. He reports several falls over the past 2 months. He feels dizzy when going to the toilet at night. He has a history of hypertension, atrial fibrillation and benign prostatic hyperplasia. He is taking bisoprolol fumarate, finasteride, indapamide, tamsulosin hydrochloride and warfarin sulfate.

His pulse rate is 76 bpm and irregular, and BP 138/84 mmHg sitting and 114/62 mmHg standing.

Investigations:
Haemoglobin 124 g/L (130–175)
White cell count 5.6 × 10^9/L (3.8–10.0)
Platelets 164 × 10^9/L (150–400)

Which medication is most likely to be contributing to his falls?

A. Apixaban
B. Bisoprolol fumarate
C. Finasteride
D. Indapamide
E. Tamsulosin hydrochloride

Correct Answer(s): E

Justification for correct answer(s): Alpha blockers are well recognised to cause postural hypotension (vasodilation)

8. A 74 year old woman collapses whilst walking. She has been having chest discomfort and increasing breathlessness on exertion for 6 months.

Her pulse is 78 bpm and low volume, and BP 120/95 mmHg. Her chest is clear and she has a systolic murmur that radiates to the carotids.

Investigations:
ECG: sinus rhythm, voltage criteria for left ventricular hypertrophy.

Which is the most concerning feature?

A. Exertional breathlessness
B. Exertional chest pain
C. Exertional collapse
D. Left ventricular hypertrophy
E. Low volume pulse

Correct Answer(s): C

Justification for correct answer(s): Dyspnoea on exertion is the commonest presenting symptom of aortic stenosis. Many patients are asymptomatic. Average survival after onset of angina is 5 years and after onset of syncope is 3 years.

9. An 89 year old woman is breathless. Her medication includes furosemide 40 mg, ramipril 1.25 mg and bisoprolol fumarate 1.25 mg.

She has pitting oedema up to her thighs. Her JVP is elevated at 8 cm. She has fine inspiratory crepitations up to the mid-zones bilaterally.

Investigations:
Sodium 128 mmol/L (135–146)
Potassium 4.1 mmol/L (3.5–5.3)
Urea 5.6 mmol/L (2.5–7.8)
Creatinine 75 µmol/L (60–120)

What is the most appropriate next step?

A. Give intravenous 0.9% sodium chloride
B. Give intravenous 1.8% sodium chloride
C. Increase furosemide dose
D. Increase ramipril dose
E. Stop bisoprolol fumarate

Correct Answer(s): C

Justification for correct answer(s): The scenario describes decompensated congestive cardiac failure. The blood tests show hyponatraemia. Therefore, the patient has hypervolaemic hyponatraemia. This is managed by fluid restriction and diuresis, therefore increasing the furosemide dose is the best answer. Administering sodium in any form will exacerbate the problem.

10. An 82 year old man has had three episodes of brief loss of consciousness in the last 24 hours. None of these were associated with convulsions. He is now alert and does not recall any weakness or loss of sensation during the episodes. He is a nursing home resident and his carer reports that he became pale before losing consciousness and recovered quickly within seconds with flushing of his face. He has a history of dementia and hypertension.

His pulse rate during the episodes was 40 bpm but is now 80 bpm. His heart sounds are normal. He has normal strength, sensation, reflexes and visual fields.

Investigations:
ECG: Sinus rhythm, rate 74 bpm.

Which investigation is most likely to confirm the diagnosis?

A. 48 hour ECG monitoring
B. Carotid Doppler ultrasound
C. CT scan of head
D. EEG
E. Tilt table test

Correct Answer(s): A

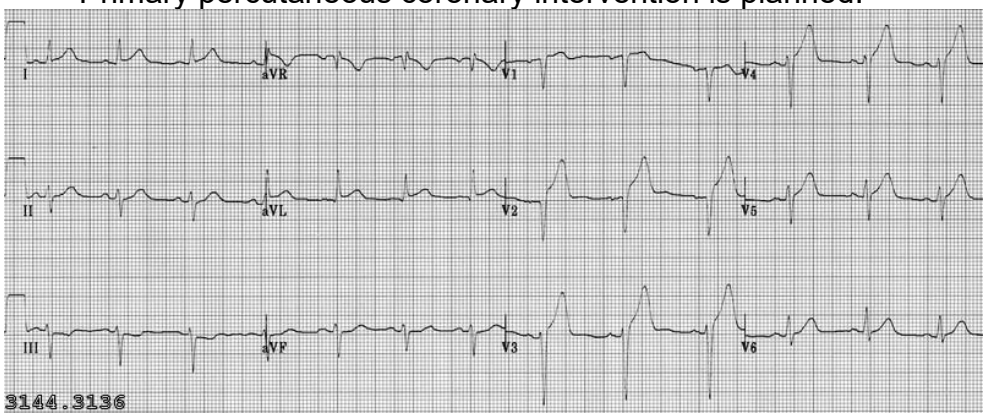
Justification for correct answer(s): Stokes Adams attacks are important causes of recurrent episodes of loss of consciousness, particularly in the elderly. Attacks may happen any time of the day and in any posture. Convulsions are typically absent in Stokes Adams attacks. There is a clear picture with palpitations; collapse, pallor and flushing with recovery within seconds and other conditions can be excluded by a 24-hour tape as Stokes Adams is typically due to a cardiac arrhythmia, e.g. heart block.

11. A 74 year old man has had 2 hours of chest pain. He has hypertension and hypercholesterolaemia, and takes ramipril and atorvastatin. He smokes 30 cigarettes per day.

His pulse is 75 bpm and regular, BP 110/60 mmHg and oxygen saturation is 96% breathing air.

Investigations:
ECG: see image

Primary percutaneous coronary intervention is planned.



Which coronary artery is most likely to be occluded?

A. Circumflex
B. Left anterior descending
C. Left main
D. Obtuse marginal
E. Right

Correct Answer(s): B

Justification for correct answer(s): ECG consistent with anteroseptal STEMI

12. A 34 year old woman collapses at the restaurant she works in. She told a colleague that she did not feel well and then dropped to the floor. Her colleagues report that she went pale and then her limbs jerked briefly when she was on the floor. She regained consciousness after 15 seconds and felt nauseous. She was not confused.

When paramedics arrive, her pulse is 89 bpm, BP 115/60 mmHg and oxygen saturation 98% breathing air.

Which is the most likely diagnosis?

A. Carotid sinus syncope
B. Focal seizure
C. Postural tachycardia syndrome
D. TIA
E. Vasovagal syncope

Correct Answer(s): E

Justification for correct answer(s): Posture/prodrome, quick recovery, no post ictal phase.

13. A 90 year old man attends hospital following a fall. He has been struggling at home with washing, dressing and meal preparation, and now needs a package of care.

Which is the best tool to assess his activities of daily living?

A. Barthel Index
B. Malnutrition Universal Screening Tool
C. Montreal Cognitive Assessment
D. Rockwood Clinical Frailty Scale
E. Waterlow Score

Correct Answer(s): A

Justification for correct answer(s): Barthel assesses personal ADLs - mobility, washing, dressing, toileting, feeding.

MoCA – cognition

MUST - nutrition

Rockwood - frailty

Waterlow- pressure sore risk

14. A 72 year old woman has 5 weeks of diarrhoea. She has fresh blood mixed with her stool and a sense of incomplete emptying of her rectum. She has no pain and has weight loss of 3 kg over 2 months.

Which is the most likely diagnosis?

A. Anal fissure
B. Colorectal cancer
C. Crohn's disease
D. Diverticulitis
E. Ulcerative colitis

Correct Answer(s): B

Justification for correct answer(s): Anal fissure is very painful. Diverticulitis causes acute episodes of pain and pyrexia. Her age makes cancer much more likely than IBD. Fresh rectal blood and weight loss are serious symptoms suggesting cancer.

15. A 53 year old man has severe upper abdominal pain. He has loose, pale diarrhoea, and is passing bulky stools that flush away poorly and float in the toilet. He has had recurrent admissions with acute abdominal pain over the last 15 years. He has a long history of excess alcohol intake.

Investigation:
CT scan abdomen: calcification in the epigastric region.

Which is the most likely mechanism for his diarrhoea?

A. Bacterial overgrowth
B. Failure of duodenal cholecystokinin
C. Increased small bowel motility
D. Loss of pancreatic exocrine function
E. Reduced bile production

Correct Answer(s): D

Justification for correct answer(s): Classical description for chronic pancreatitis with loss of exocrine function.

16. A 77 year old man is admitted with 1 day of severe left iliac fossa pain and fresh rectal bleeding.

His temperature is 38.7°C, pulse 109 bpm and regular, and BP 119/64 mmHg. There is tenderness in the left iliac fossa, without guarding or rebound.

Which is the most appropriate next investigation?

A. Blood cultures
B. CT of abdomen and pelvis
C. Flexible sigmoidoscopy
D. Stool culture
E. Ultrasonography of abdomen

Correct Answer(s): A

Justification for correct answer(s): Although some would go for sigmoidoscopy, cultures remain 1st step in pyrexial patient.

17. A 59 year old woman has had 6 months of tiredness and aching in both legs, worse on the left than right. The symptoms are worse when she has been standing, and are relieved by elevating her legs. She has a history of COPD.

Her BP is 144/86 mmHg and JVP 2 cm above the sternal angle. She has telangiectasia and superficial varicosities on both lower legs with pitting oedema at the ankle. She has a 1.5 cm superficial, slightly tender ulcer behind the left medial malleolus. Her femoral and popliteal pulses are palpable. Her foot pulses are weakly palpable.

Which is the most likely diagnosis?

A. Bowen's disease
B. Chronic venous insufficiency
C. Lymphoedema
D. Peripheral arterial disease
E. Right heart failure

Correct Answer(s): B

Justification for correct answer(s): The history and findings are typical of chronic venous insufficiency. Characteristically the pain is worse on standing and relieved by elevation, unlike arterial disease which would worsen. The location of the ulcer on the medial side of the lower foot is also typical. Foot pulses may be difficult to feel due to oedema, but this is not enough to make a diagnosis of arterial disease.

18. A 25 year old man has a cough that has been keeping him awake at night for 8 weeks. He has recently had a cold that has now resolved. He has had a similar cough when exercising, which is worse in the winter. He has never smoked.

Which is the most likely diagnosis?

A. Asthma
B. Bronchiectasis
C. Chronic obstructive pulmonary disease
D. Sarcoidosis
E. Viral induced wheeze

Correct Answer(s): A

Justification for correct answer(s): A cough at night, associated with a cough on exercise in the cold is most likely asthma.

19. A 62 year old woman has 3 months of cough productive of green sputum. She has no fever, sweats or haemoptysis. She had pneumonia as a child. She has never smoked.

There are course crackles over both lungs. She has bilateral leg oedema. Sputum culture grows Pseudomonas aeruginosa.

What is the most likely diagnosis?

A. Bronchiectasis
B. Congestive cardiac failure
C. COPD
D. Lung cancer
E. Tuberculosis

Correct Answer(s): A

Justification for correct answer(s): A chronic productive cough in a patient who had childhood pneumonia is most likely to be bronchiectasis.

20. A 24 year old man has sharp stabbing right sided chest pain, worse when he breathes in. It began suddenly 2 hours ago with no history of trauma, but the pain has been worsening and he has noticed that he is also becoming breathless. He has a history of asthma and uses a salbutamol inhaler as required.

His pulse is 98 bpm, BP 128/89 mmHg, respiratory rate 24 breaths per minute and oxygen saturation 88% in air. There are decreased breath sounds on the right and the trachea is central.

Which is the most appropriate next step?

A. 15 L/min oxygen by reservoir bag mask
B. 24% oxygen by Venturi mask
C. Arterial blood gases
D. Right sided intercostal drain
E. Right sided needle thoracocentesis

Correct Answer(s): A

Justification for correct answer(s): This is because oxygen administration comes before any other management.

21. A 68 year old woman has 6 weeks of cough. She also has fatigue and has lost 4 kg in weight over 3 months. She is a smoker with a 30 pack-year history.

She has no palpable lymph nodes. Chest and abdominal examinations are unremarkable.

Investigations:
Haemoglobin 120 g/L (115–150)
White cell count 6.4 × 10^9/L (3.8–10.0)
Platelets 290 × 10^9/L (150–400)

Chest X-ray: 2-cm mass in upper lobe of right lung

Which is the most appropriate next investigation?

A. Bronchoscopy
B. CT of chest and abdomen
C. Isotope bone scan
D. PET-CT
E. Pulmonary function tests

Correct Answer(s): B

Justification for correct answer(s): Current NICE guidance advises CT scan before bronchoscopy. Ward doctors should be aware of this to question a patient admitted for bronchoscopy before CT scan.

22. A 65 year old woman has 1 day of breathlessness, 1 week of progressive headache and 3 months of weight loss and cough.

Her pulse rate is 88 bpm, respiratory rate 20 breaths per minute and oxygen saturation 95% breathing oxygen 4L/min via nasal prongs. She has a swollen face and neck and distended veins on her chest. There are reduced breath sounds at the right upper lobe. Chest X-ray shows a mass in the right upper lobe.

Which is the most appropriate diagnostic investigation?

A. Carotid Doppler scan
B. Contrast-enhanced CT scan of chest
C. CT scan of head
D. Duplex ultrasound scan of subclavian vein
E. Venography

Correct Answer(s): B

Justification for correct answer(s): The patient has superior vena cava obstruction. A contrast enhanced CT scan is the best initial imaging technique.

23. A 44 year old man has just finished treatment with IV antibiotics for an episode of spontaneous bacterial peritonitis. He has alcohol related liver disease and is being considered for a liver transplant. His medications include spironolactone, furosemide and thiamine.

His temperature is 36.4°C, pulse 76 bpm and BP 104/64 mmHg. He has shifting dullness.

Which additional treatment should be started?

A. Bendroflumethiazide
B. Ciprofloxacin
C. Midodrine hydrochloride
D. Prednisolone
E. Propranolol hydrochloride

Correct Answer(s): B

Justification for correct answer(s): Patients who have had an episode of SBP are at risk of recurrence. Prophylactic antibiotics are advised until ascites resolves. Norfloxacin, ciprofloxacin and cotrimoxazole all have evidence to support their use and local guidelines will vary. There is also more recent evidence that rifaximin is effective and may become first line.
https://www.nice.org.uk/guidance/ng50/chapter/Managing-complications#preventing-spontaneous-bacterial-peritonitis Managing complications | Cirrhosis in over 16s: assessment and management | Guidance | NICE

24. An 84 year old woman has had 8 months of malaise and lethargy.

She is pale. Her pulse is 86 bpm and BP 144/94 mmHg. Her chest is clear.

Investigations:
Haemoglobin 90 g/L (115–150)
Mean cell volume (MCV) 84 fL (80–96)
Urea 15.7 mmol/L (2.5–7.8)
Creatinine 260 µmol/L (60–120)
eGFR 16 mL/min/1.73 m^2 (>60)
Serum vitamin B_{12} 180 ng/L (160–925)
Serum folate 8 µg/L (3–15)
Ferritin 10 µg/L (12–200)

Which is the most appropriate initial treatment for her anaemia?

A. Blood transfusion
B. Dialysis
C. Erythropoietin
D. Iron replacement
E. Thiamine

Correct Answer(s): D

Justification for correct answer(s): the patient has iron deficiency anaemia and chronic kidney disease. First line treatment is iron.

25. A 74 year old woman attends her GP with jaundice. She was diagnosed with a right lower lobe pneumonia 5 days ago and started on co-amoxiclav. She drinks 30 units of alcohol per week. Her BMI is 35 kg/m^2.

Investigations:
Prothrombin time 13 seconds (10–12)
Serum albumin 41 g/L (35–50)
Serum total bilirubin 150 µmol/L (<17)
Serum alanine aminotransferase 101 IU/L (10–50)
Serum alkaline phosphatase 600 IU/L (25–115)

What is the most likely cause of the abnormal investigations?

A. Alcoholic hepatitis
B. Choledocholithiasis
C. Cholestatic hepatitis
D. Liver abscess
E. Primary biliary cirrhosis

Correct Answer(s): C

Justification for correct answer(s): The timing of onset in relation to commencing an antibiotic known to predispose to cholestasis makes this the most likely diagnosis.

26. A 56 year old woman has had 6 months of malaise and night sweats. She does not smoke and drinks 20 units of alcohol per week.

She has jaundice.

Investigations:
AST 133 IU/L (10–40)
ALP 114 IU/L (25–115)
Bilirubin 45 µmol/L (<17)
γGT 150 IU/L (9–40)

Antinuclear antibodies (ANA) 1:640 (<20)
Antimitochondrial antibodies negative
Anti-smooth muscle antibodies positive

What is the most likely diagnosis?

A. Alcoholic hepatitis
B. Autoimmune hepatitis
C. Hepatitis C infection
D. Primary biliary cholangitis
E. Primary sclerosing cholangitis

Correct Answer(s): B

Justification for correct answer(s): The combination of gradual onset of symptoms, elevated transaminases and together with antibodies to nuclear and smooth muscle antigens make this the most likely diagnosis. - Justification for Unselected: Primary biliary cholangitis (PBC) and primary sclerosing cholangitis (PSC) produce obstructive jaundice with elevated alkaline phosphatase and antibodies to mitochondria (PBC) or ANCA (PSC). Smooth muscle antibodies are not a feature of hepatitis C infection. Alcohol intake not sufficient to cause hepatitis.

27. A 32 year old man is referred for genetic counselling following a recent myocardial infarction. At the time of admission he was noted to have a total cholesterol of 9.6 mmol/L (<5.0) and LDL cholesterol of 5 mmol/L (<3.0). His uncle died of a heart attack aged 41 years and his grandmother died of a stroke aged 46 years. He is afraid that he may pass on his risk of heart disease to any future children.

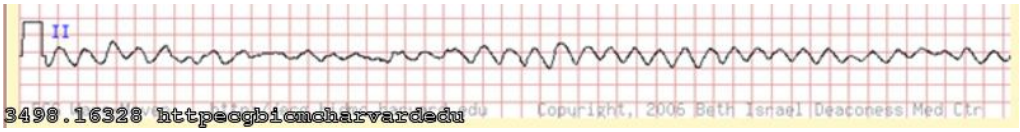
Which is the most likely pattern of inheritance for this condition?

A. Autosomal dominant
B. Autosomal recessive
C. Mitochondrial
D. X-linked dominant
E. X-linked recessive

Correct Answer(s): A

Justification for correct answer(s): Patient has familial hypercholesteralaemia (LDL > 4.9 + FH of early atherosclerotic disease). This is inherited as an autosomal dominant condition.

28. A 60 year old man collapses in a shopping centre and bystanders initiate basic life support. Upon arrival, the paramedics find the patient unresponsive, without a pulse. A cardiac monitor is attached and rhythm strip obtained (see image).



Which is the most appropriate initial intervention?

A. Defibrillation
B. Intravenous adenosine
C. Intravenous amiodarone hydrochloride
D. Intravenous epinephrine
E. Synchronised cardioversion

Correct Answer(s): A

Justification for correct answer(s): As per resus guidelines. Synchronised cardioversion is used for conscious patients.

29. An 81 year old woman has had 6 months of intermittent visual hallucinations where she sees small children and farmyard animals. They are more often seen at home and in the evenings. She does not recognise any of the children and they do not interact with her. She describes no auditory, olfactory or tactile hallucinations, and she feels that her thoughts are her own. She is otherwise well and is not concerned about her mood or memory. She is registered partially sighted because of macular degeneration. She has a history of hypertension.

Her visual acuity is 6/36 in both eyes. She has no other focal neurological deficit. Her abbreviated mental test score is 10/10. CT scan of head shows small vessel disease only.

Which is the most likely diagnosis?

A. Charles Bonnet syndrome
B. Dementia with Lewy bodies
C. Focal aware seizures
D. Occipital stroke
E. Schizophrenia

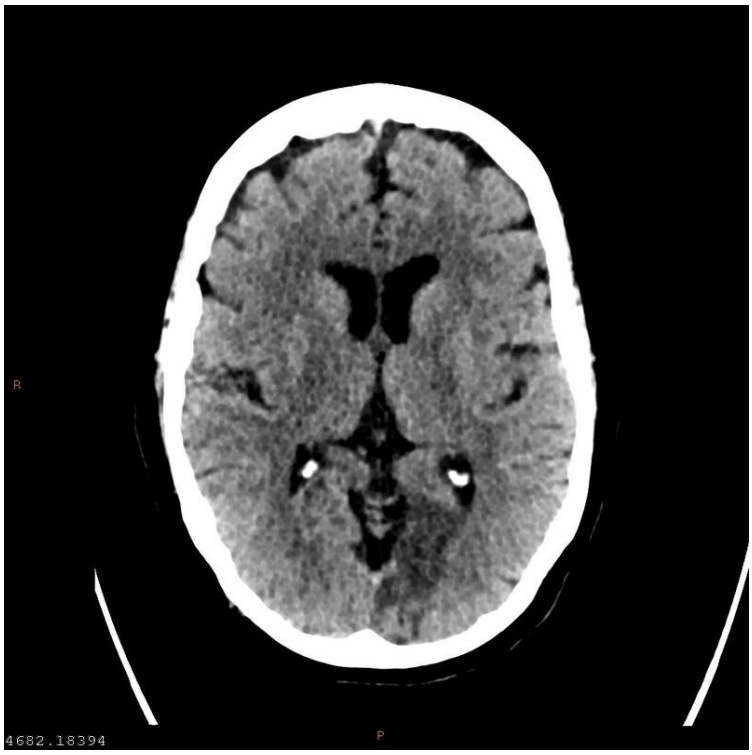
Correct Answer(s): A

Justification for correct answer(s): This presentation is characteristic of Charles Bonnet syndrome (CBS): recurrent, complex visual hallucinations occurring in a person with significant visual impairment, with preserved cognition and without evidence of psychosis, delirium or another sensory hallucination. The combination of macular degeneration, bilateral reduced visual acuity, formed hallucinations of people/animals, and normal cognition all support this diagnosis. Charles Bonnet syndrome is the only option where all these elements without other symptoms and signs would be found.

30. A 70 year old man has 2 days of confusion, disorientation, difficulty with balance and visual disturbance, of sudden onset. He has AF and hypertension.

His temperature is 37.2°C, pulse 98 bpm, BP 128/70 mmHg, respiratory rate 15 breaths per minute and oxygen saturation 96% breathing air.

Investigations:
CT scan of head: see image



What is the most likely diagnosis?

A. Left cerebellar infarction
B. Left occipital infarction
C. Left occipital metastasis
D. Left parietal abscess
E. Left parietal infarction

Correct Answer(s): B

Justification for correct answer(s): The CT scan of the head shows left occipital cortex and subcortical low attenuation and swelling compatible with a subacute left posterior cerebral artery territory infarct, which fits with the clinical presentation.

31. A 75 year old man is admitted to hospital with pneumonia and reduction in his mobility. He takes amlodipine, apixaban, atorvastatin, bisoprolol fumarate, metformin hydrochloride and ramipril.

His eGFR is 37 mL/min/1.73 m^2 (>60). His routine medication and an antibiotic have been prescribed.

Which is the most appropriate management to reduce the risk of venous thromboembolism?

A. Aspirin
B. Low molecular weight heparin
C. No additional treatment
D. Tranexamic acid
E. Unfractionated heparin

Correct Answer(s): C

Justification for correct answer(s): Patients who are admitted to hospital and have reduced mobility are normally prescribed a prophylactic dose of low molecular weight heparin/unfractionated heparin (if they don't have a high risk of bleeding). Renal function is used to determine whether unfractionated or low molecular weight heparin is indicated. However, neither option is required if the patient is already on anticoagulation-this man takes rivaroxaban.

32. A 17 year old girl has 2 days of loss of appetite, nausea and central to lower abdominal pain. Her last menstrual period was 30 days ago.

Her temperature is 37.7°C. She is tender in the right Iliac fossa and hypogastrium. There is no lymphadenopathy.

Investigations:
White cell count 12.3 × 10^9/L (3.8–10.0)
Pregnancy test: negative
Urinalysis: blood negative, protein negative

Which is the most likely diagnosis?

A. Acute appendicitis
B. Acute cholecystitis
C. Ectopic pregnancy
D. Inflammatory bowel disease
E. Pelvic Inflammatory disease

Correct Answer(s): A

Justification for correct answer(s): Typical presentation of appendicitis. Before pregnancy test available, ectopic would have been very likely.

33. A 59 year old man has 6 months of bilateral calf pain on walking around 100 metres. He has CKD stage 5, hypertension and type 2 diabetes mellitus. His medication includes amlodipine, doxasozin and ramipril.

His BP is 142/90 mmHg. His femoral pulses are palpable. His popliteal and foot pulses are difficult to feel. He has pitting oedema.

Investigations:
Ankle brachial pressure index (ABPI): right leg 1.4, left leg 1.4

What is the most likely cause of his ABPI result?

A. Capillary advanced glycation end production
B. Incompetent venous valves
C. Increased aortic elasticity
D. Increased interstitial hydrostatic pressure
E. Medial arterial calcification

Correct Answer(s): E

Justification for correct answer(s): Elevated ABPI (>1.4) indicates non-compressible arteries, which are typically due to medial arterial calcification (Monckeberg's sclerosis). This condition makes the arteries rigid and less compressible, leading to falsely elevated ABPI values even in the presence of significant peripheral arterial disease.

34. A 56 year old man has had fever, malaise and increasing breathlessness for 2 weeks. He has been off work with a cough and general ill health for three weeks. He has a 25 pack year smoking history.

He has a temperature of 38.3°C, pulse 98 bpm, BP 106/78 mmHg and respiratory rate of 24 breaths per minute. His oxygen saturation is 94% breathing air. There is reduced movement of the right chest with dullness to percussion, reduced breath sounds and absent vocal resonance over the right lung base.

Investigations:
White cell count 26 x 10^9/L (3.0–10.0)
Serum C reactive protein 350 mg/L (<5)

What is the most likely diagnosis?

A. Bronchial carcinoma
B. Empyema
C. Infective exacerbation of COPD
D. Lobar pneumonia
E. Pneumothorax

Correct Answer(s): B

Justification for correct answer(s): The illness has evolved over 2-3 weeks, with cough followed by persistent fever, malaise and increasing breathlessness. This is a typical trajectory for a complicated parapneumonic effusion progressing to empyema: pneumonia may precede the accumulation of infected pleural fluid.

The inflammatory response is particularly striking: WCC 26 x 10^9/L and CRP 350 mg/L. These values strongly support significant ongoing bacterial infection. In the context of a prolonged respiratory illness and signs of a pleural effusion, an empyema is most likely

35. A 42 year old man has 3 days of increasing breathlessness and a cough productive of blood-streaked, green sputum.

His temperature is 39.2°C, pulse 105 bpm, BP 105/60 mmHg, respiratory rate 24 breaths per minute and oxygen saturation 91% breathing air. There is reduced air entry with coarse crackles at the left lung base. The skin of the palms of his hands is peeling.

Chest X-ray: bilateral consolidation with multiple cavities

Which is the most likely causative organism?

A. Haemophilus influenzae
B. Legionella pneumophilia
C. Mycobacterium tuberculosis
D. Staphylococcus aureus
E. Streptococcus pneumoniae

Correct Answer(s): D

Justification for correct answer(s): Lung cavitation is a common finding in pneumonia due to Staphylococcus aureus. The Gram stain shows positive cocci in clusters. Peeling of the skin on his palms suggests that the patient may be developing toxic shock syndrome and may suggest this is a superantigen producing staphylococcus aureus strain.

36. A 77 year old man has had worsening breathlessness on exertion, cough and tiredness for 6 months. He is a retired plumber with a 50 pack-year history of cigarette smoking.

He is cachectic. His temperature is 36.6º C, pulse 94 bpm, BP 100/72 mmHg, respiratory rate 16 breaths per minute and oxygen saturation is 89% breathing air. He has reduced expansion and quiet breath sounds on auscultation of the left hemithorax.

Investigations:
Chest X-ray: diaphragmatic pleural plaques. Lobulated thickening on the left pleura with small pleural effusion. Reduced volume of the left hemithorax.

What is the most likely diagnosis?

A. Bronchial carcinoma
B. Mesothelioma
C. Parapneumonic effusion
D. Pleural metastases
E. Pneumothorax

Correct Answer(s): B

Justification for correct answer(s): Clinical history, examination and X-ray description consistent with mesothelioma. Metastases would not have pleural plaques.

37. A 47 year old man has had 3 months of dull, intermittent epigastric pain. It is worse in the morning and relieved by drinking milk. His weight is steady. He drinks 20 units of alcohol per week.

His abdomen is soft, with some discomfort in the epigastrium on deep palpation. There are no masses.

Investigations:
Haemoglobin 127 g/L (130–175)
MCV 77 fL (80–96)

Which is the most likely diagnosis?

A. Chronic pancreatitis
B. Coeliac disease
C. Duodenal ulcer
D. Gastro-oesophageal reflux
E. Pancreatic cancer

Correct Answer(s): C

Justification for correct answer(s): The history is typical of a duodenal ulcer. These are more common than gastric ulcers and are often worse in the morning and relieved by eating. The mild anaemia and low MCV is most likely due to blood loss from ulcer. There are no worrying features to suggest an underlying malignancy and the patient is young for pancreatic cancer. There are no clinical features to suggest chronic pancreatitis or coeliac disease.

38. A 60 year old woman has mild shortness of breath and wheeze, both of which are worse at night. Her symptoms started after discharge from hospital following an acute myocardial infarction. She has a history of diabetes, COPD and depression. She does not smoke. She is taking aspirin, atorvastatin, bisoprolol fumarate, clopidogrel, ramipril, sertraline and a salbutamol inhaler.

Which drug is most likely to have caused her symptoms?

A. Atorvastatin
B. Bisoprolol fumarate
C. Clopidogrel
D. Ramipril
E. Sertraline

Correct Answer(s): B

Justification for correct answer(s): This scenario is commonly seen in primary care - B-blockers given to patients with reversible airways disease can precipitate wheeze and dyspnoea.

39. A 19 year old woman has had severe abdominal pain and frequent bloody diarrhoea for the past 3 days. She has ulcerative colitis and takes sulfasalazine.

Her temperature is 37.9°C, pulse 100 bpm and regular, BP 110/60 mmHg and oxygen saturation 98% breathing air. Her abdomen is soft and mildly tender throughout. There is no distension, guarding or rebound tenderness, or organomegaly. She has active bowel sounds.

Intravenous fluids have been started.

Which is the most appropriate initial treatment?

A. Intravenous ciclosporin
B. Intravenous hydrocortisone
C. Intravenous infliximab
D. Oral loperamide hydrochloride
E. Rectal mesalazine

Correct Answer(s): B

Justification for correct answer(s): This is an acute exacerbation IV corticosteroid is first line, ciclosporin if that doesn't work and infliximab for people who can't tolerate ciclosporin. Mesalazine not indicated for acute exacerbation and loperamide contraindicated.

40. A 25 year old woman has had recurrent episodes of abdominal discomfort associated with loose and urgent bowel movements for a year. There is no blood in the stool and her weight is stable.

Her inflammatory markers, coeliac screen and faecal calprotectin are all normal. Faecal immunochemical test negative.

She is given lifestyle and dietary advice.

What is the most appropriate next step in management?

A. Advise her to buy ispaghula husk over the counter
B. Prescribe amitriptyline
C. Prescribe fluoxetine
D. Prescribe loperamide
E. Refer for a colonoscopy

Correct Answer(s): D

Justification for correct answer(s): The patient has IBS-D: Loperamide would slow down peristalsis and hence reduce faecal urgency. Loperamide is 1st line; amitriptyline 2nd line for diarrhoea predominant IBS.
https://cks.nice.org.uk/topics/irritable-bowel-syndrome/management/ (Updated Sept 2022)

41. A 25 year old student has had urgency and loose stools for several days. Several of her friends have had a similar illness. It is the end of term and she needs to make a 5 hour car journey home.

What is the most appropriate medication?

A. Lactulose
B. Loperamide
C. Mebeverine
D. Mesalazine
E. Prochlorperazine

Correct Answer(s): B

Justification for correct answer(s): The most likely underlying diagnosis is acute infectious gastroenteritis, and loperamide is the best option because the immediate therapeutic goal is short-term control of diarrhoea and urgency for her journey. The history that several friends have had a similar illness strongly suggests a transmissible gastrointestinal infection rather than IBS or inflammatory bowel disease. Mebeverine is an anti-spasmodic, prochlorperazine treats nausea and mesalazine is used for inflammatory bowel disease.

42. A 54 year old man has had worsening shortness of breath and swollen legs for 2 months. He has severe pulmonary fibrosis.

His temperature is 37.1ºC, pulse 100 bpm, BP 114/86 mmHg, respiratory rate 17 breaths per minute and oxygen saturation 90% breathing air. There is a pansystolic murmur loudest in inspiration at the left sternal edge. There are fine inspiratory crackles throughout the chest. There is swelling of both legs up to the calf.

What is the most likely diagnosis?

A. Congestive cardiac failure
B. Infective endocarditis
C. Pulmonary embolus
D. Pulmonary hypertension
E. Rheumatic mitral valve disease

Correct Answer(s): D

Justification for correct answer(s): Presentation is PH. Pre-existing severe restrictive lung disease.

43. A 74 year man is admitted for investigation of chest pain. He has a history of dementia. All investigations are normal, but at night he is wandering around the ward and refusing to return to his bed.

What is the most appropriate first line treatment?

A. Donepezil
B. Haloperidol
C. Lorazepam
D. Orientation strategies
E. Zopiclone at night

Correct Answer(s): D

Justification for correct answer(s): The most appropriate initial management is orientation strategies and other non-pharmacological/environmental measures. Wandering in a hospitalised patient with dementia is a behavioural manifestation that should prompt assessment for unmet needs and environmental triggers, rather than automatic sedation. This approach is consistent with NICE guidance on dementia. NICE NG97 (01/18) Dementia: Assessment, management and support for people living with dementia and their carers: https://www.nice.org.uk/guidance/ng97/documents/full-guideline-updated

44. An 84 year old man has agitation and is unable to weight bear, two days after admission following a fall at home. When assessed by the physiotherapist, he is unwilling to stand up and shouts loudly when his right leg is touched. He is prescribed regular analgesia.

Admission X-rays of his hips and pelvis show only mild degenerative changes.

Which is the most appropriate next action?

A. CT scan of hips and pelvis
B. Encourage mobilisation
C. Lorazepam as required
D. Referral to psychiatry of old age
E. Repeat hip and pelvic X-ray

Correct Answer(s): A

Justification for correct answer(s): This man has had a fall and now appears to have a delirium. However, he appears to have severe pain on touching his injured leg. The absence of a fracture on hip X-ray does not fully exclude undisplaced hip fracture or pelvic fracture. Therefore, the first step should include regular analgesia and CT imaging.

45. A 51 year old man develops a distended abdomen 4 days after surgery for a perforated appendix. He has not passed flatus for 24 hours. He is being treated with oral paracetamol, and intravenous co-amoxiclav and metronidazole.

His temperature is 37.4°C. His abdomen is soft and non-tender but distended, with scanty bowel sounds.

What is the most likely diagnosis?

A. Pelvic collection
B. Postoperative ileus
C. Pseudomembranous colitis
D. Small bowel ischaemia
E. Small bowel obstruction

Correct Answer(s): B

Justification for correct answer(s): Postoperative ileus commonly follows abdominal surgery because bowel handling, surgical stress, inflammation, anaesthetic agents and particularly opioid analgesia inhibit intestinal motility. This patient has an additional risk factor: surgery was performed for a perforated appendix. Peritoneal inflammation itself can markedly inhibit bowel motility, so ileus may be more prolonged than after an uncomplicated appendicectomy. Pelvic collection would be expected to have more systemic response and ischaemic gut more pain. Pseudomembranous colitis usually associated with diarrhoea.

46. A 40 year old man has become gradually more unwell over 2 days. He feels very tired, weak and short of breath. He does not have a cough. He has schizophrenia and started treatment with clozapine 3 weeks ago. He has no history of medical problems and is a non-smoker.

His temperature is 37.5°C, pulse 105 bpm, BP 120/80 mmHg and respiratory rate is 25 breaths per minute. His heart sounds are normal and his chest is clear.

Investigations:
Haemoglobin 140 g/L (130–175)
White cell count 12.1 × 10^9/L (3.8–10.0)
Creatine kinase 400 U/L (25–200)
Troponin I 2168 ng/L (< 5)

ECG: widespread concave ST segment elevation with T-wave inversion
Chest X-ray: no abnormalities

What is the most likely diagnosis?

A. COVID-19 pneumonia
B. Myocardial infarction
C. Myocarditis
D. Neuroleptic malignant syndrome
E. Sepsis

Correct Answer(s): C

Justification for correct answer(s): Myocarditis is an important and life-threatening complication of clozapine. It often presents non-specifically, so a high index of suspicion is needed if a patient becomes acutely unwell soon after starting clozapine. As well as ECG changes, troponin and CK are often raised. NMS is relatively rare with clozapine (and CK is too low, and symptoms are not typical). Clozapine can cause neutropenia and hence sepsis, but neutropaenia is mild here. Lack of risk factors and gradual onset make MI less likely than myocarditis.

47. A 54 year old man has worsening jaundice, nausea and fever for 3 days. He has had a lack of appetite for 3 weeks. He drinks 50 units of alcohol a week and smokes 10 cigarettes a day. He has hypertension and hypercholesterolaemia. He takes amlodipine and atorvastatin.

His temperature is 38.0ºC, pulse 100 bpm, BP 100/60 mmHg, respiratory rate 16 breaths per minute and oxygen saturation is 100% breathing air. His BMI is 25 kg/m^2. He is jaundiced and has spider naevi. His abdomen is soft and non-tender.

Investigations:
Alanine aminotransferase (ALT) 80 IU/L (10–50)
Albumin 32 g/L (35–50)
Alkaline phosphatase (ALP)170 IU/L (25–115)
Aspartate aminotransferase (AST) 180 IU/L (10–40)
Bilirubin (total) 90 µmol/L (<21)
Gamma glutamyl transferase (γGT) 220 IU/L (9–40)

What is the most likely cause for his current presentation?

A. Acute viral hepatitis
B. Alcoholic hepatitis
C. Autoimmune hepatitis
D. Drug-induced hepatitis
E. Metabolic dysfunction-associated steatotic liver disease

Correct Answer(s): B

Justification for correct answer(s): This patient has an AST of 2:1 of ALT along with typical symptoms for an acute presentation of acute hepatitis on a background of alcohol history. Alcoholic hepatitis is the most likely cause.

48. A 93 year old woman has reduced consciousness and difficulty swallowing. She has developed aspiration pneumonia and delirium. She has hypertension and dementia. She usually takes amlodipine, donepezil and ramipril.

Her temperature is 38.0°C, pulse 114 bpm, BP 107/76 mmHg, respiratory rate 18 breaths per minute and oxygen saturation 91% breathing air.

Investigations:
Sodium 151 mmol/L (135–146)
Potassium 5.4 mmol/L (3.5–5.3)
Urea 19.6 mmol/L (2.5–7.8)
Creatinine 135 µmol/L (60–120)

eGFR (now) 35 mL/min/1.73 m^2 (>60)
eGFR (1 month ago) 42 mL/min/1.73 m^2 (>60)

Urinary osmolality 750 mosmol/kg (350–1000)

What is the most likely cause of her hypernatraemia?

A. Acute kidney injury
B. Adrenal insufficiency
C. Dehydration
D. Ramipril
E. Syndrome of inappropriate antidiuresis

Correct Answer(s): C

Justification for correct answer(s): High urine osmolality and urea, combined with the history suggests dehydration and reduced intake. SIAD, Addison disease and drugs would cause hyponatraemia.

49. A 35 year old woman has sudden onset of breathlessness and right sided pleuritic chest pain. She was recently found to have bony metastases from previously treated breast carcinoma and received her second cycle of chemotherapy 2 days ago. She has a history of asthma.

Her temperature is 37.3°C, pulse 102 bpm, BP 105/60 mmHg, respiratory rate 26 breaths per minute and oxygen saturation 94% in air. Her chest is clear.

What is the most likely diagnosis?

A. Lung metastases
B. Lymphangitis carcinomatosis
C. Pneumonia
D. Pneumothorax
E. Pulmonary embolus

Correct Answer(s): E

Justification for correct answer(s): This is because of clinical scenario. Sudden onset breathlessness and chest pain with tachycardia and tachypnoea are pulmonary emboli until proven otherwise.

50. A 61 year old man is in atrial fibrillation. He was previously well.

His pulse rate is 76 bpm and BP 121/74 mmHg. An echocardiogram is normal. He does not want cardioversion.

Which is the most appropriate management option?

A. Apixaban
B. Aspirin
C. Clopidogrel
D. No medication required
E. Warfarin sodium

Correct Answer(s): D

Justification for correct answer(s): He has a CHADS2VASC score of 0 and a normal echo therefore no treatment should be considered as an option. NICE CKS Atrial fibrillation 2018

51. A 22 year old man has painless, visible haematuria 4 days after developing a painful throat. He has taken paracetamol and ibuprofen.

His temperature is 37.1°C, pulse 91 bpm, BP 156/85 mmHg, respiratory rate 15 breaths per minute and oxygen saturation 96% breathing air.

Investigations:
Urea 6.9 mmol/L (2.5–7.8)
Creatinine 106 µmol/L (60–120)

Urinalysis: blood 3+, protein 2+

Which is the most likely diagnosis?

A. IgA nephropathy
B. Interstitial nephritis
C. Minimal change disease
D. Post-streptococcal glomerulonephritis
E. Systemic vasculitis

Correct Answer(s): A

Justification for correct answer(s): Typical presentation of IgA nephropathy. Post-strep has a later presentation.

52. A 34 year old man has fever and a cough productive of brown sputum, flecked with blood for one week. He has right sided pleuritic chest pain. He smokes and injects heroin.

He has coarse crackles in his right lung and a sinus over his right femoral vein.

Investigation:
CT Pulmonary Angiogram shows right sided consolidation and some early cavitation with right sided pulmonary emboli.

What is the most likely diagnosis?

A. Diamorphine induced chronic pulmonary disease
B. Inferior vena cava thrombosis
C. Pulmonary haemorrhage
D. Pulmonary tuberculosis
E. Tricuspid endocarditis

Correct Answer(s): E

Justification for correct answer(s): Unifying diagnosis is right sided endocarditis due to staph aureus in PWID.

53. A 48 year old woman is reviewed in the renal clinic. She has CKD stage 4. Her medications include colecalciferol.

Investigations:
Urea 17.3 mmol/L (2.5–7.8)
Creatinine 295 µmol/L (60–120)
eGFR 17 mL/min/1.73 m^2 (>60)
ALP 120 IU/L (25–115)
Calcium (adjusted) 2.3 mmol/L (2.2–2.6)
Phosphate 2.8 mmol/L (0.8–1.5)

Vitamin D 78 nmol/L (75–100)
Parathyroid hormone 60.0 pmol/L (1.6–8.5)

Which is the most appropriate class of treatment to start?

A. Bisphosphonate
B. Calcimimetic
C. Calcitonin
D. Phosphate binder
E. Vitamin D analogue

Correct Answer(s): D

Justification for correct answer(s): Phosphate binders are used to reduce the absorption of phosphate from the gastrointestinal tract, thereby lowering serum phosphate levels. This intervention is crucial in managing mineral and bone disorders in CKD patients, helping to control hyperphosphatemia and secondary hyperparathyroidism.

54. A 24 year old man has had flu-like symptoms for 4 weeks. He has been taking paracetamol twice a day for his fevers, which lasted 2 weeks and stopped 10 days ago. He drinks 12 units of alcohol a week.

His temperature is 37.0ºC, pulse 80 bpm and BP 120/70 mmHg. His abdomen is normal.

Investigations:
Haemoglobin 140 g/L (130–175)
White cell count 3.8 × 10^9/L (4.0–11.0)
Platelets 200 × 10^9/L (150–400)
Alanine aminotransferase (ALT) 186 IU/L (10–50)
Alkaline phosphatase (ALP) 75 IU/L (25–115)
Bilirubin (total) 30 µmol/L (<21)

Which is the most likely underlying cause?

A. Alcoholic hepatitis
B. Drug-induced hepatitis
C. Epstein Barr virus
D. Gilbert's syndrome
E. Hepatitis A

Correct Answer(s): C

Justification for correct answer(s): EBV associated liver dysfunction is relatively common. ALT rise is usually <5 times upper limit of normal with a normal or near normal bilirubin.

55. A 25 year old man has routine blood borne virus screening in preparation for starting medical school. Nine months previously he had fatigue, nausea and poor appetite for 2 weeks.

Investigations:
Hepatitis B surface antigen (HBsAg): positive
Hepatitis B envelope antigen (HBeAg): positive
Antibody to Hepatitis B surface antigen: positive
Antibody to Hepatitis B core antigen: IgG positive, IgM negative
Antibody to Hepatitis B envelope antigen: negative
Hepatitis B virus DNA: positive

Which is the best explanation of these results?

A. Acquired immunity to Hepatitis B infection
B. Acute Hepatitis B infection
C. Chronic Hepatitis B infection
D. Inactive Hepatitis B infection
E. Previous vaccination against Hepatitis B infection

Correct Answer(s): C

Justification for correct answer(s): LFTs indicate hepatocellular disease. HBsAg indicates active infection and HBeAg indicates viral replication. Presence of anti-HBc IgG but not IgM suggests infection timescale consistent with the described illness episode (i.e. >6 mths). Absence of anti HBe confirms that active chronic infection has not transformed to an inactive carrier state.

56. A 74 year old man becomes very sweaty and then loses consciousness on a postoperative surgical ward. He has a history of type 2 diabetes treated with insulin. His immediate capillary blood glucose is 2.2 mmol/L, and he is given 100 mL of 20% dextrose.

He is now conscious and talking coherently. His repeat capillary blood glucose is 4.9 mmol/L.

Which is the most appropriate next step in management?

A. Administer 1 L of 5% dextrose over 8 h
B. Administer intramuscular glucagon 1 mg
C. Give him a carbohydrate snack
D. Give him a cup of tea with two sugars
E. Omit the next dose of insulin

Correct Answer(s): C

Justification for correct answer(s): Complex carbohydrates should be given as soon as possible to restore liver glycogen.

57. A 51 year old woman has had dizziness and unsteadiness for 1 month. Her symptoms are present most of the time and there are no clear precipitants.

Her BP is 146/87 mmHg. She has reduced hearing in the right ear. She has nystagmus on right lateral gaze. She has no diplopia.

Which is the most appropriate management?

A. CT scan of head
B. MR scan of brain
C. Perform Dix–Hallpike manoeuvre
D. Start aspirin
E. Start betahistine

Correct Answer(s): B

Justification for correct answer(s): This patient has symptoms that are compatible with an acoustic neuroma (dizziness, unsteady gait and deafness). The deafness is not noted by ~30% of patients but is found at presentation in most. An MR scan brain is indicated. It is more sensitive than CT scan.

58. A 32 year old man attends his GP with nausea, vomiting and worsening abdominal pain which started 12 hours ago. The pain is on the left side of his abdomen which is not relieved by paracetamol. He has dysuria and the urine appears dark and cloudy. He has rheumatoid arthritis and takes oral methotrexate weekly.

His temperature is 38.2ºC, pulse 114 bpm, BP 108/58 mmHg and oxygen saturation 98% breathing air. His abdomen is soft with tenderness over the left flank.

Urinalysis: blood 2+, protein 2+, leucocytes 2+

Which is the most appropriate next step in management?

A. Blood and urine cultures
B. Oral co-amoxiclav
C. Oral nitrofurantoin
D. Urgent hospital admission
E. Urgent US scan of abdomen

Correct Answer(s): D

Justification for correct answer(s): Right flank pain alongside dysuria, pyrexial and N&V makes pyelonephritis the most likely diagnosis. Admission is warranted as he reports difficulty tolerating oral analgesia due to vomiting multiple times and the patient is taking methotrexate so they would be at higher risk of complications. https://cks.nice.org.uk/topics/pyelonephritis-acute/management/management/

59. A 65 year old white woman has itching on both lower legs. She is under the palliative care team with ovarian cancer with metastases but is not acutely unwell.

She has bilateral oedema to the knees. The skin on the legs is dry, red and scaly.

Which is the most likely diagnosis?

A. Bilateral cellulitis
B. Erythema nodosum
C. Lymphoedema from pelvic compression
D. Paraneoplastic deep vein thromboses
E. Venous eczema

Correct Answer(s): E

Justification for correct answer(s): All of the options could cause red legs. Only venous eczema will be dry, scaly and itchy. Oedema here is due to associated chronic venous insufficiency. This is a common and important clinical presentation.

60. An 80 year old man has multiple lumps on his bald scalp.

There are numerous erythematous keratotic lesions that are very rough on palpation. The surrounding skin is freckled, with focal areas of hypopigmentation.

Which is the most likely neoplastic complication of this condition?

A. Basal cell carcinoma
B. Kaposi's sarcoma
C. Malignant melanoma
D. Mycosis fungoides
E. Squamous cell carcinoma

Correct Answer(s): E

Justification for correct answer(s): This is because solar keratoses have a risk of malignant transformation to squamous cell carcinoma.

61. A 62 year old woman has a rash on her neck and upper chest which is made worse by sun exposure. She also has fatigue and difficulty climbing the stairs at home. She has no significant past medical history and takes no regular medication. She has a symmetrical purplish discoloration of her eyelids with mild eyelid oedema. She has grade 4/5 proximal muscle weakness.

Which is the most likely diagnosis?

A. Atopic eczema
B. Dermatomyositis
C. Psoriasis
D. Rosacea systemic
E. Systemic lupus erythematosus

Correct Answer(s): B

Justification for correct answer(s): The photosensitive rash on the neck and upper chest, heliotrope eyelid discoloration and proximal muscle weakness are characteristic of dermatomyositis.

62. A 52 year old man visits his GP with 2 months of general lethargy, weakness and leg cramps. He has a history of hypertension, heart failure and Barrett's oesophagitis. He takes amlodipine, bisoprolol, eplerenone, esomeprazole and losartan.

Investigations:
Sodium 139 mmol/L (135–146)
Potassium 4.3 mmol/L (3.5–5.3)
Calcium 2.2 mmol/L (2.2–2.6)
Magnesium 0.42 mmol/L (0.7–1.0)
eGFR >60 mL/min/1.73 m^2(>60)

Which drug is most likely to be contributing to his symptoms?

A. Amlodipine
B. Bisoprolol
C. Eplerenone
D. Esomeprazole
E. Losartan

Correct Answer(s): D

Justification for correct answer(s): The presentation here is due to hypomagnesaemia, most likely due to long term esomeprazole use.

63. A 42 year old woman has recent weight loss following an upper respiratory tract illness (URTI).

Her thyroid is slightly enlarged, smooth and diffusely tender.

Investigations:
Thyroid stimulating hormone 0.1 mU/L (0.3–4.2)
Free T4 35 pmol/L (9–25)
Free T3 11 pmol/L (4.0–7.2)

Thyroid technetium (Tc- 99m) pertechnetate scan shows generalised reduced uptake.

Which is the most likely explanation for these findings?

A. Graves disease
B. Non-specific response to stress of illness
C. Thyroid adenoma
D. Toxic thyroid nodule
E. Viral thyroiditis

Correct Answer(s): E

Justification for correct answer(s): This is because typical findings of suppressed TSH, raised T4 and T3 but suppressed iodine uptake during the phase of thyroid hormone excess suggest viral/subacute thyroiditis.

64. A 68 year old man with type 2 diabetes mellitus has a non-healing wound on his left foot following a minor injury 3 weeks ago.

His temperature is 38.3°C. The left foot is cool. There is a 2 cm ulcer on his toe, with cellulitis up to the forefoot. Foot pulses are palpable in both feet. He has reduced sensation to light touch in both feet.

Which is the most appropriate management?

A. Immediate admission to hospital
B. Refer to podiatrist
C. Refer to practice nurse for wound dressing
D. Start oral flucloxacillin
E. Urgent referral to diabetic outpatient clinic

Correct Answer(s): A

Justification for correct answer(s): NICE NG19: Diabetic foot problems: prevention; management (Jan 2016) Ulceration with fever requires urgent admission to hospital.

65. A 35 year old woman has 2 months of palpitations and sweating.

A 2 cm nodule can be palpated in the left lobe of the thyroid gland, but the lymph nodes are not enlarged.

Investigations:
TSH <0.01 mU/L (0.3–4.2)
Free T4 29 pmol/L (9–25)
Free T3 8.5 pmol/L (4.0–7.2)
TSH-receptor antibody negative

Which investigation is most likely to establish the diagnosis?

A. CT scan of neck
B. Technetium uptake scan
C. Thyroid peroxidase antibody
D. Ultrasound-guided fine needle aspiration of nodule
E. Ultrasound scan of thyroid

Correct Answer(s): B

Justification for correct answer(s): The diagnosis is likely to be a single toxic nodule. Technetium uptake scan would be appropriate to confirm the diagnosis.

66. A 45 year old man has had two episodes of headache, flushing and palpitation over the past 12 months. His BP has been noted to be very high during these episodes.

Investigations:
Plasma metanephrine 1200 pmol/L (<600)
Plasma normetanephrine 3500 pmol/L (<1000)

Which class of drug should be initiated as a first-line antihypertensive?

A. Alpha adrenergic receptor agonist
B. Alpha adrenergic receptor antagonist
C. Antimuscarinic agent
D. Beta adrenergic receptor agonist
E. Beta adrenergic receptor antagonist

Correct Answer(s): B

Justification for correct answer(s): Anti adrenergic is the drug of choice in patients with suspected pheo.

67. A 33 year old doctor who is training to be a surgeon develops an acute febrile illness accompanied by a generalised maculopapular rash.

Blood tests confirm that he has acute HIV infection. He starts treatment and is concerned about the impact that this diagnosis will have upon his work.

Which is the likely long-term impact on his planned career?

A. He can continue to work with no change to his surgical practice
B. He must disclose his condition to patients on whom he plans to operate
C. He will be restricted to non-operative roles
D. He will have to change to a non-surgical career
E. He will only be able to perform less invasive procedures

Correct Answer(s): A

Justification for correct answer(s): With appropriate treatment and monitoring, including checking that his viral load is low, HIV positive surgeons do not pose any risk to their patients and can operate without restriction.

68. A 19 year old woman is found collapsed at home. She drinks one bottle of vodka a day. She is a person who injects drugs.

Her temperature is 35.2°C, pulse 125 bpm, BP 102/62 mmHg, respiratory rate 22 breaths per minute and oxygen saturation 96% breathing air. Her right leg is swollen and tender to touch.

She is catheterised and passes a small amount of dark reddish-brown urine. Urinalysis: blood 3+, protein 1+, nitrites negative.

Investigations:
Urea 23.1 mmol/L (2.5–7.8)
Creatinine 534 µmol/L (60–120)
Calcium (adjusted) 1.9 mmol/L (2.2–2.6)
Phosphate 3.6 mmol/L (0.8–1.5)

What is the most likely cause of her AKI?

A. Acute interstitial nephritis
B. Acute tubular injury
C. ANCA-associated vasculitis
D. Renal vein thrombosis
E. Rhabdomyolysis

Correct Answer(s): E

Justification for correct answer(s): This is AKI in a patient with positive blood on urinalysis, low calcium and high phosphate after a long lie. Rhabdomyolysis seems likely.

69. A 37 year old woman has 5 hours of right-sided abdominal pain. The pain is sharp and radiates towards her groin. She is vomiting and is restless due to the pain. She is allergic to penicillin.

Investigations:
Urinalysis: blood 4+

βhCG: negative

Which is the most appropriate immediate management?

A. Co-amoxiclav
B. Diclofenac
C. Hyoscine butylbromide
D. Tamsulosin
E. Tramadol

Correct Answer(s): B

Justification for correct answer(s): Most important management is appropriate acute pain relief. https://cks.nice.org.uk/topics/renal-or-ureteric-colic-acute/management/management/

70. A 55 year old man attends the Emergency Department with severe generalised headache of sudden onset.

He is in pain, photophobic and has a complete ptosis on the left side. On lifting the left eyelid, his eyeball is looking downwards and outwards, and his pupil is dilated and unresponsive to light.

Which is the most likely site of aneurysmal rupture?

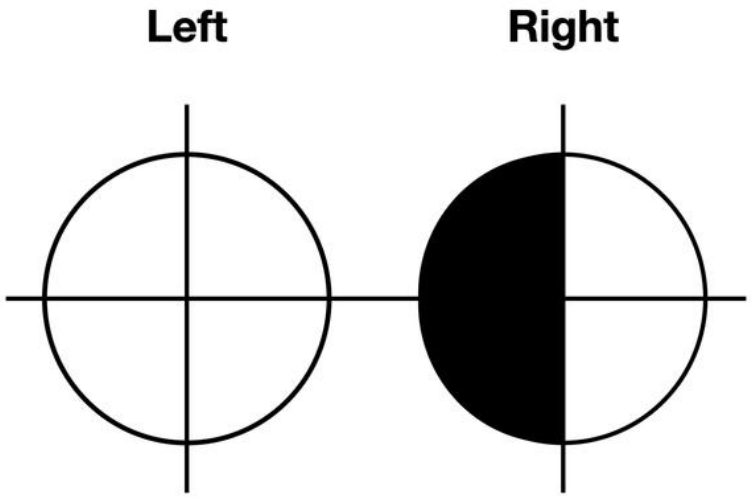
A. Anterior communicating artery
B. Middle cerebral artery
C. Ophthalmic artery
D. Posterior cerebral artery
E. Posterior communicating artery

Correct Answer(s): E

Justification for correct answer(s): The third nerve is closely aligned to the posterior communicating artery and rupture of an aneurysm here typically causes a complete third nerve palsy with pupillary involvement.

71. A 42 year old man has blurred vision in his right eye, gradually worsening over 6 months. He has had no headache, diplopia, or systemic symptoms. His visual acuity is 6/9 right and 6/6 left.

His visual field shows a deficit in the right eye vision (see image). Fundi and remaining neurological examination are normal.



1493.18496

What is the most likely underlying cause?

A. Anterior ischaemic optic neuropathy
B. Chronic glaucoma
C. Internal carotid artery aneurysm
D. Pituitary macroadenoma
E. Temporal lobe glioma

Correct Answer(s): C

Justification for correct answer(s): The visual field defect shows a right nasal hemianopia, which localises to the lateral aspect of the right optic nerve. The most common cause is compression from an adjacent internal carotid artery aneurysm. Pituitary macroadenoma typically cause bitemporal hemianopia due to chiasmal compression. Anterior ischaemic optic neuropathy would be of sudden onset and almost never causes a lateraised hemianopia, it is almost always either a superior or an inferior altitudinal defect. Temporal lobe glioma usually causes superior quadrantanopia from optic radiation involvement. Therefore, Aneurysm of the internal carotid artery is correct.

72. A 22 year old woman has 2 days of worsening visual loss in her left eye and can now only detect hand movements. Six months earlier, she had an episode of facial numbness that resolved. She smokes 10 cigarettes per day and drinks three bottles of wine each week.

She has a relative afferent pupillary defect with visual acuity of hand movements in the left eye. Neurological examination is otherwise normal. Her BMI is 37 kg/m^2. MR scan of brain shows multiple T2 hyperintensities.

Which action is most likely to reduce her risk of a further neurological episode?

A. Alcohol reduction
B. IV methylprednisolone for 3 days
C. Oral methylprednisolone for 5 days
D. Smoking cessation
E. Weight loss

Correct Answer(s): D

Justification for correct answer(s): Smoking is a poor prognostic factor in MS increasing the risk of further relapses by a third. Steroids speed recovery but do not alter outcomes. Obesity worsens outcomes but not as marked as smoking by a long way. Alcohol appears to have little effect.

73. A 78 year old woman has had 6 months of progressive leg heaviness. It improves when she sits down but not when she is standing up. She finds it easier to walk uphill rather than downhill. She has a history of hypertension and type 2 diabetes mellitus.

She has reduced light touch and pinprick sensation in both feet to the mid calves and reduced joint position sense at both big toes. Foot pulses are present.

Which investigation is most likely to confirm the diagnosis?

A. Ankle brachial pressure index
B. CT of spine
C. MR imaging of lumbar spine
D. Nerve conduction studies
E. X-ray of lumbar spine

Correct Answer(s): C

Justification for correct answer(s): This is typical presentation of lumbar spinal stenosis. MR scan is investigation of choice.

74. A 34 year old man has leg weakness, difficulty walking and back pain for 24 hours. He has tingling in both hands. He had a self-limiting diarrhoeal illness 10 days ago.

He has bilateral proximal leg weakness, with absent knee and plantar reflexes. Vibration sense is reduced to the hips and pin-prick to the knees bilaterally.

What is the most likely diagnosis?

A. Anterior spinal artery infarction
B. Guillain-Barré syndrome
C. Hypokalaemic paralysis
D. Spinal cord compression
E. Transverse myelitis

Correct Answer(s): B

Justification for correct answer(s): GBS commonly follows campylobacter diarrhoeal illness. Back pain is common in GBS; 30% of cases and can be severe.

75. A 50 year old man has 4 weeks of persistent floaters in his right eye. Initially he could see flashing lights in this eye that have now resolved.

Retinal examination is normal on direct ophthalmoscopy.

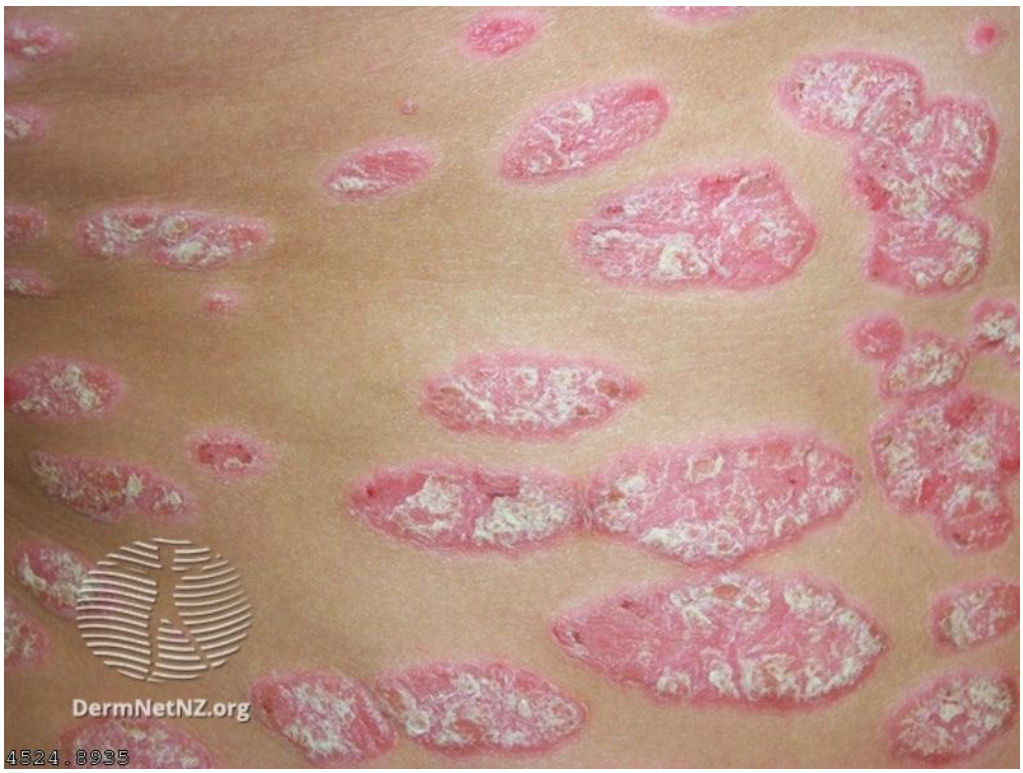
Which is the most likely diagnosis?

A. Dry macular degeneration
B. Posterior vitreous detachment
C. Retinal detachment
D. Retinal tear
E. Vitreous haemorrhage

Correct Answer(s): B

Justification for correct answer(s): normal ophthalmoscopy and presentation consistent with posterior vitreous detachment

76. A 31 year old man has had a chronic rash for several years which is gradually spreading (see image). Using moisturiser on his skin has made no difference.



Which is the most appropriate first line treatment?

A. Oral methotrexate
B. Oral psoralen with local ultraviolet A (PUVA) irradiation
C. Topical calcineurin inhibitor
D. Topical mild corticosteroid with antifungal agent
E. Topical potent corticosteroid plus topical vitamin D analogue

Correct Answer(s): E

Justification for correct answer(s): NICE guideline recommends topical treatment as first line, potent steroid once daily plus Vit D analogue once daily would be appropriate as trunk. October 2012-CD153 1.3.2.1 Offer a potent corticosteroid applied once daily plus vitamin D or a vitamin D analogue applied once daily (applied separately, one in the morning and the other in the evening) for up to 4 weeks as initial treatment for adults with trunk or limb psoriasis.

77. A 38 year old white woman has 6 months of facial flushing, red spots and pustules on her face.

She has telangiectasia over the cheeks with erythematous papules and pustules.

Which is the most likely diagnosis?

A. Acne vulgaris
B. Discoid lupus erythematosus
C. Rosacea
D. Sarcoid
E. Seborrhoeic dermatitis

Correct Answer(s): C

Justification for correct answer(s): Classical features of rosacea.

78. A 67 year old patient has fatigue for a few months. There is no change in weight and no pain. They are not on any regular medication or over-the-counter drugs.

Investigations:
Haemoglobin 145 g/L (130–175)
Erythrocyte sedimentation rate 4 mm/h (<20)
Creatinine 78 µmol/L (60–120)
Calcium 2.8 mmol/L (2.2–2.6)
Vitamin D 81 nmol/L (75–100)
TSH 3.5 mU/L (0.3–4.2)
Parathyroid hormone 17.1 pmol/L (1.6–8.5)
24 h urine calcium excretion normal

Which is the most likely diagnosis?

A. Familial hypocalciuric hypercalcemia
B. Multiple myeloma
C. Primary hyperparathyroidism
D. Secondary hyperparathyroidism
E. Tertiary hyperparathyroidism

Correct Answer(s): C

Justification for correct answer(s): Classic incidental primary hyperparathyroidism. Not Secondary as vit D and EGFR normal. FHH is still a possibility, but no urine results given so far. This is not likely to be multiple myeloma as Hb and ESR normal, no weight loss or pain.

79. A 70 year old woman has 1 month of worsening memory and mild confusion. She has a history of hypertension. She takes lisinopril and atorvastatin. She smokes 20 cigarettes per day.

She is disorientated in time and place. She has weakness of hip flexion in both legs. Her Montreal Cognitive Assessment score is 22/30, with deficits in recall and attention.

Investigations:
MR scan of brain: T2 weighted image shows several hyperintense lesions at border of grey and white matter in frontal and temporal lobes

Which is the most likely diagnosis?

A. Brain metastases
B. Frontotemporal dementia
C. Glioblastoma multiforme
D. Progressive multifocal leucoencephalopathy
E. Vascular dementia

Correct Answer(s): A

Justification for correct answer(s): The presence of multiple lesions at the border of grey and white matter is most likely due to brain metastases, with lung cancer most likely in a patient with a significant smoking history.

80. A 25 year old man has 2 days of pain in his left testicle.

His temperature is 37.0°C, pulse 65 bpm, BP 118/78 mmHg and oxygen saturation 99% breathing air. His left testicle is swollen with a palpable, tender swelling at the back. The pain is relieved by lifting the testicle.

Which is the most likely diagnosis?

A. Epididymo-orchitis
B. Hydrocele
C. Inguinal hernia
D. Testicular cancer
E. Testicular torsion

Correct Answer(s): A

Justification for correct answer(s): All of these are in the differential diagnoses, but the clue is that the epididymis is painful and the pain is relieved by lifting the testicle. Reference: https://cks.nice.org.uk/topics/scrotal-pain-swelling/

81. A 15 year old boy has acute onset of left testicular pain and lower abdominal pain associated with nausea and vomiting over the past 90 minutes. There is no dysuria or urethral discharge.

His temperature is 37.6°C, pulse 86 bpm, BP 150/93 mmHg, respiratory rate 14 breaths per minute and oxygen saturation 98% breathing air. There is left hemiscrotal erythema, and the left testicle is swollen, tender and high riding with a transverse lie. Urinalysis is normal.

Which is the most likely diagnosis?

A. Epididymitis
B. Inguinal hernia
C. Orchitis
D. Testicular tumour
E. Torsion of testis

Correct Answer(s): E

Justification for correct answer(s): Differential diagnosis of the acute scrotum.

82. A 28 year old woman has a painful, red, watery left eye. She wears contact lenses but has been unable to wear them for several days because of the pain. Over the past 24 hours, she has been shying away from bright light.

She has localised erythema surrounding the medial aspect of the cornea of her left eye. There is dendritic fluorescein staining under UV light over her medial cornea.

Which is the most likely diagnosis?

A. Adenoviral conjunctivitis
B. Anterior uveitis
C. Bacterial conjunctivitis
D. Herpetic keratitis
E. Traumatic corneal ulceration

Correct Answer(s): D

Justification for correct answer(s): History and examination suggests the presence of herpetic keratitis, especially with the presence of "dendritic" fluorescein staining. Contact lens wearers do get non-infective corneal ulceration/keratitis but the present of dendritic staining is making herpes simplex much more likely. Adenoviral and bacterial infections are common, especially in contact lens wearers, but they do not cause dendritic pattern on fluorescein staining. Anterior uveitis causes a red, painful eye and photophobia, but would usually be more generally erythematous and would not cause ulceration.

83. A 36 year old man has lost weight and experienced night sweats and a dry cough over 6 weeks.

His temperature is 37.3°C. He has a palpable right cervical lymph node. His chest is clear.

Investigations:
Chest X-ray: opacification in right upper lobe

Lymph node biopsy: lymph node architecture is effaced by an infiltrate composed of macrophages with strong epithelioid features with central caseous necrosis

Which is the most likely diagnosis?

A. Histoplasmosis
B. Lymphoma
C. Sarcoidosis
D. Seminoma
E. Tuberculosis

Correct Answer(s): E

Justification for correct answer(s): This is because histological examination of the lymph node shows macrophages with caseating central necrosis and epitheliod feature which is typical of TB.

84. A 32 year old woman has had 2 days of difficulty chewing and cannot finish a whole meal. She has also had 6 weeks of double vision. This has been progressively worsening and is most noticeable at the end of the day.

What is the most likely diagnosis?

A. Botulism
B. Graves' disease
C. Motor neurone disease
D. Myasthenia gravis
E. Oculopharyngeal muscular dystrophy

Correct Answer(s): D

Justification for correct answer(s): Classical history of myasthenia gravis in a young woman.

85. A 25 year old woman has 4 months of dull frontal headaches that are increasing in frequency. She now has symptoms on most days. Her headache is worse in the morning. She has associated nausea, fleeting loss of vision and tinnitus. She takes paracetamol as required, with some relief. Her BMI is 32 kg/m^2.

Which is the most likely diagnosis?

A. Cerebral venous sinus thrombosis
B. Idiopathic intracranial hypertension
C. Medication overuse headache
D. Migraine
E. Tension headache

Correct Answer(s): B

Justification for correct answer(s): Fleeting visual loss and tinnitus make IIH the most likely diagnosis.

86. A 58 year old man has one episode of painless visible haematuria. He has hypertension and takes amlodipine. He smokes 10 cigarettes per day.

His pulse is 72 bpm and BP 140/92 mmHg. Abdominal examination is normal. Urinalysis: blood 2+.

Investigations:
Haemoglobin 149 g/L (130–175)
Creatinine 105 µmol/L (60–120)
eGFR 63 mL/min/1.73 m^2(>60)

Mid-stream urine: no growth

What is the most appropriate next step in management?

A. Cystoscopy
B. Repeat urine culture in 1 month
C. Urine cytology
D. Urine protein:creatinine ratio
E. US scan of abdomen

Correct Answer(s): A

Justification for correct answer(s): This patient has painless haematuria and other risk factors. Urological malignancy must be excluded. They should be referred on a two week wait for cystoscopy. https://cks.nice.org.uk/topics/urological-cancers-recognition-referral/management/referral-for-suspected-urological-cancer/

87. A 62 year old man has difficulty walking because of increasing leg swelling. He smokes 20 cigarettes daily.

His BP is 144/94 mmHg, and he has oedema of both legs with swelling of his scrotum. Urinalysis shows blood 1+, protein 4+.

Investigations:
Urea 16.0 mmol/L (2.5–7.8)
Creatinine 180 µmol/L (60–120)
Urine protein: creatinine ratio 680 mg/mmol (<30)
Albumin 22 g/L (35–50)

Which investigation is most likely to lead to establish the underlying diagnosis?

A. 24 hour urine collection
B. CT abdomen and pelvis
C. Cystoscopy
D. Renal biopsy
E. Serum anti-neutrophil cytoplasmic antibodies

Correct Answer(s): D

Justification for correct answer(s): In adult onset nephrotic syndrome renal biopsy is central to establishing a diagnosis.

88. A 54 year old woman has had worsening headaches for 4 months. She has also noticed enlargement of her hands and feet over the last 3 years. Her shoe size has increased during this time. She has significant joint aches and increased sweating.

Which investigation is most likely to confirm the underlying diagnosis?

A. Insulin stress test
B. Mixed meal test
C. Oral glucose tolerance test
D. Prolonged supervised fast
E. Synacthen® test

Correct Answer(s): C

Justification for correct answer(s): OGTT with GH assessment, showing non suppression would be the confirmatory test for acromegaly. Prolonged fast and mixed meal test are used for hypoglycaemia. Insulin stress test is for GH deficiency. Synacthen® test is for steroid deficiency.

89. A 20 year old man has retinitis pigmentosa. His parents are unaffected, but his maternal grandfather had retinitis pigmentosa as did the maternal grandfather's brother.

Which is the most likely pattern of inheritance?

A. Autosomal recessive
B. Multifactorial
C. Sporadic mutation
D. X-linked dominant
E. X-linked recessive

Correct Answer(s): E

Justification for correct answer(s): This is because there is vertical transmission of the disease affecting males with transmission through an unaffected female. Retinitis pigmentosa was chosen because it can have various patterns of inheritance including autosomal recessive, autosomal dominant and X-linked recessive. Autosomal dominant was not given as an option as it would have required a discussion of reduced penetrance to explain the unaffected mother which is less likely than answer x-linked dominant.

90. A 74 year old woman has general malaise and disorientation.

Her temperature is 38.2°C, pulse 110 bpm and BP 90/60 mmHg. Blood cultures grow Enterococcus faecalis.

Which is the most appropriate antibiotic treatment?

A. Amoxicillin
B. Ceftriaxone
C. Ciprofloxacin
D. Doxycycline
E. Nitrofurantoin

Correct Answer(s): A

Justification for correct answer(s): Amoxicillin is the most reliable agent against enterococci.

91. A 66 year old man gets up to pass urine three to four times per night. He has a 1 year history of increasing hesitancy and terminal dribbling of urine.

Rectal examination shows a smoothly enlarged prostate. Urine culture is negative.

Investigations:
Creatinine 80 µmol/L (60–120)

Which is the most appropriate next investigation?

A. Cystoscopy
B. Prostate biopsy
C. Prostate specific antigen
D. Ultrasound scan of prostate
E. Urodynamic studies

Correct Answer(s): C

Justification for correct answer(s): The patient is likely to have either benign prostatic hyperplasia or prostatic carcinoma so PSA levels are required. He may need the other investigations in the future, but they are not appropriate first line investigations.

92. A 25 year old woman is 16 weeks pregnant. She has a new kitten and has been advised not to handle cat litter.

What infection is a risk to the fetus?

A. Cytomegalovirus
B. Group B streptococcus
C. Hepatitis B
D. Toxoplasmosis
E. Varicella zoster virus

Correct Answer(s): D

Justification for correct answer(s): All are infections that may affect the baby in pregnancy, but only toxoplasmosis is a risk from handling cat faeces.

93. An 83 year old man on a rehabilitation unit has recurrent episodes of urinary incontinence. He reports having to wait a little longer than usual to start passing urine and for the flow to stop completely.

Rectal examination reveals a smooth, enlarged prostate. Post-voiding bladder scan shows a residual urinary volume of 130 mL.

Which is the most appropriate intervention?

A. Alfuzosin hydrochloride
B. Bladder training
C. Duloxetine
D. Tolterodine tartrate
E. Urethral catheterisation

Correct Answer(s): A

Justification for correct answer(s): Patient has severe symptoms but on a rehab ward so unlikely to be fit for surgery at this point in time. Needs more than conservative measures (incontinent and residual volume). First line is alpha-blocker. NICE CG97 LUTS in men: management

94. A 52 year old woman has 6 months of burning, tingling pain in her left foot. It is interfering with her sleep. She has ischaemic heart disease and AF.

She has reduced sensation to pinprick and vibration in a stocking distribution.

Investigations:
HbA1c 87 mmol/mol (20–42)

What is the most appropriate management?

A. Amitriptyline
B. Gabapentin
C. Ibuprofen
D. Morphine
E. Prednisolone

Correct Answer(s): B

Justification for correct answer(s): Gabapentin is first line for distal symmetrical polyneuropathy. NSAIDs are not effective, steroids would worsen hyperglycaemic control, amitriptyline is a good choice but not with cardiac history.

95. A 19 year old man presents to the Emergency Department with 48 hours of fever, sore throat and a generalised rash that began on his face and spread downwards.

His temperature is 39.1°C, pulse rate 112 bpm and BP 106/65 mmHg. He has a widespread blanching rash and conjunctivitis. He has white spots in his mouth.

Which is the most likely diagnosis?

A. Erythrovirus (parvovirus) B19
B. Measles
C. Meningococcal septicaemia
D. Rubella
E. Scarlet fever

Correct Answer(s): B

Justification for correct answer(s): typical measles history. Vaccination history has not been given as risks cueing to the answer and this is an important pattern to recognise.

96. A 19 year old woman has 2 days of malaise and headache. She has recently returned from a 2 week holiday to India.

Her temperature is 38°C and pulse rate 77 bpm. She has photophobia and neck stiffness.

Investigations:
Cerebrospinal fluid: Opening pressure 90 mmH_2O (50–180)
Total protein 1.2 g/L (0.15–0.45)
Glucose 4.1 mmol/L (2.2–4.4)
Cell count 500 /µL (<5)
Lymphocyte count 90% (60–70)

Paired plasma glucose 6.0 mmol/L

Which is the most likely diagnosis?

A. Bacterial meningitis
B. Cryptococcal meningitis
C. Malaria
D. Tuberculous meningitis
E. Viral meningitis

Correct Answer(s): E

Justification for correct answer(s): Short history and raised lymphocytes strongly indicate viral meningitis.

97. A 65 year old woman has had polyuria and polydipsia for 3 months. She has a history of bipolar disorder, hypertension and peptic ulcer disease. She takes lisinopril, lithium and omeprazole. She is a non-smoker and drinks around 30 units of alcohol per week.

Investigations:
Sodium 148 mmol/L (135–146)
Potassium 3.9 mmol/L (3.5–5.3)
Urea 10.1 mmol/L (2.5–7.8)
Creatinine 79 µmol/L (60–120)

Serum osmolality 308 mOsmol/kg (285–295)

Calcium 2.3 mmol/L (2.2–2.6)
HbA1c 38 mmol/mol (20–42)

Urinary osmolality 100 mOsmol/kg (100–1000)
Urinary sodium 65 mmol/L (>20)

She is given a therapeutic trial of oral desmopressin, and the investigations above remain unchanged.

Which is the most likely diagnosis?

A. Arginine vasopressin deficiency (AVPD, cranial diabetes insipidus)
B. Arginine vasopressin resistance (AVPR, nephrogenic diabetes insipidus)
C. Primary polydipsia
D. Syndrome of inappropriate ADH secretion
E. Type 2 diabetes mellitus

Correct Answer(s): B

Justification for correct answer(s): Arginine vasopressin resistance (AVPR, nephrogenic diabetes insipidus) is due to lithium, which is a well known complication.

98. A 52 year old man has been generally unwell with pain in the right eye for 5 days.

He cannot open his right eyelid, and the right pupil is dilated and does not react to light. His right eye is deviated downwards and laterally, and he cannot move the eye upwards or medially. On attempting to look down further, his right eyeball rotates slightly.

Which is the best description of the clinical signs?

A. Complete third nerve palsy
B. Complete third nerve palsy and fourth nerve palsy
C. Fourth nerve palsy
D. Horner's syndrome
E. Partial third nerve palsy

Correct Answer(s): A

Justification for correct answer(s): There is complete ptosis and the eye is down and out, but the pupil is spared, so this is a partial third nerve palsy. On attempting to look down further there is rotation (intorsion) of the globe, indicating that the fourth nerve is intact. The eye can move laterally and so the sixth nerve is also intact. Thus this is an isolated partial third.

99. A 35 year old man has sudden loss of vision in his right eye with no prodromal symptoms. He has longstanding type 1 diabetes and has not attended for eye screening for several years.

Which complication of diabetes is the most likely cause of his visual symptoms?

A. Cataract
B. Ischaemic optic neuropathy
C. Maculopathy
D. Retinal detachment
E. Vitreous haemorrhage

Correct Answer(s): E

Justification for correct answer(s): Visual loss most likely to be Vitreous haemorrhage given background of type 1 diabetes and sudden onset.

100. A 32 year old man has had persistent non-visible haematuria for 3 months, initially detected during an army medical assessment. He has had no visible haematuria. He had no family history of renal disease. He drinks 30 units of alcohol a week.

His pulse is 74 bpm and BP 147/93 mmHg. Examination is normal. Urinalysis shows blood 3+ and protein 2+ only.

Investigations:
Creatinine 104 µmol/L (60–120)
eGFR >60 mL/min/1.73 m^2(>60)
ANA negative

US scan of kidneys: normal appearance

Which is the most likely diagnosis?

A. Alport's syndrome
B. IgA nephropathy
C. Lupus nephritis
D. Membranous nephropathy
E. Thin basement membrane disease

Correct Answer(s): B

Justification for correct answer(s): Young patient with persistent non visible haematuria and high BP most likely has primary GN- IgA is commonest primary GN. Negative immunology is reassuring.