Mock 2B SBA 2020 ANSWERS

Peer Teaching
2B Rep Doha Basiouni

1. **C**
2. **D**
3. **C**
4. **D**
5. **C**
6. **C**
7. **A**
8. **C**
9. **C**
10. **B**
11. **B**
12. **B**
13. **C**
14. **B**
15. **C**
16. **B**
17. **C**
18. **D**
19. **E**
20. **C**
21. **C**
22. **D**
23. **B**
24. **D**
25. **B**
26. **A**
27. **B**
28. **D**
29. **C**
30. **A**
31. **B**
32. **A**
33. **B**
34. **D**
35. **B**
36. **D**
37. **D**
38. **B**
39. **C**
40. **C**
41. **D**
42. **A**
43. **C**
44. **C**
45. **E**
46. **B**
47. **C**
48. **A**
49. **E**
50. **A**

Explained answers

1. **C.** This man's history of central chest pain that comes on when he exerts himself and is relieved by rest is typical of stable angina. An ECG at rest will be normal for someone with stable angina. Troponin T levels only rise in the blood once there has been permanent myocardial damage due to a myocardial infarction. A chest X-Ray will not provide information on the coronary vasculature and is unsuitable for investigation of angina. An echocardiogram is more useful for imaging of the heart muscle and its valves. The investigation of choice is a stress ECG, which will reveal changes on ECG when the person exercises.

2. **D.** The woman's clinical history of exertional chest pain and recurrent syncope point to a cardiac problem. An ejection systolic murmur that can be heard loudest over the aortic area and radiates to the carotids indicates aortic stenosis (stiffness of the aortic valves).

3. **C.** This woman's history of weight gain, constipation, amenorrhoea, and low mood combined with bradycardia and dry skin indicate hypothyroidism. Carbimazole and propylthiouracil are used to treat hyperthyroidism and would make her symptoms worse. Carbamazepine is an anticonvulsant and therefore not indicated for hypothyroidism. Metformin is indicated in diabetes, not hypothyroidism. Levothyroxine is a synthetic form of T4 and will restore her thyroid hormone levels to normal ranges and will relieve her of her symptoms.

4. **D.** This man's history of severe epigastric pain which radiates to the back and is improved by leaning forward is typical of acute pancreatitis. Jaundice, pyrexia, and his history of excessive drinking all back up this diagnosis. The causes of acute pancreatitis are summarised in a helpful mnemonic – GET SMASHED(!), the most common causes are gallstones and ethanol (alcohol)

5. **C.** Courvoisier's sign states that painless jaundice combined with a palpable gallbladder is a pancreatic/biliary neoplasm until proven otherwise. This man's weight loss and night sweats all but confirm the presence of something sinister. Reflux disease would present

with heartburn, gallstones with right upper quadrant pain, NAFLD would not present with weight loss, and coeliac disease would not give someone jaundice.

6. **C.** This woman's severe facial pain that feels like an electric shock and lasts for a few seconds is typical of trigeminal neuralgia. The first line treatment for this is carbamazepine. Carbimazole is the treatment for hyperthyroidism. Gabapentin can be used to treat trigeminal neuralgia, but only if carbamazepine does not work. Carbidopa is used as part of the treatment of Parkinson's disease, and ergometrine is a medication used to induce uterine contractions to treat post-partum haemorrhage.

7. **A.** This woman's history of symmetrical joint pain, swelling, and stiffness that is worse after rest and lasts for over an hour in the morning points to inflammatory joint disease. The lumps on her arms further narrow down the diagnosis to rheumatoid arthritis (rheumatoid nodules). The first line treatment for RA is methotrexate, the gold standard DMARD. Glucocorticoids may also be given for the first 3 months while waiting for the DMARD to take effect. Colchicine is used as a painkiller for acute gout flares. Morphine and gabapentin are not indicated in RA. Infliximab is a biologic treatment that can be used to treat RA but is not first line. *Note: learn the x-ray findings for RA/OA as these are easily examinable*.

8. **C.** This woman's history of cough, haemoptysis, chest pain, weight loss, and night sweats point to either lung cancer or TB. Her travel history points towards TB, for which the treatment is the RIPE regimen (rifampicin, isoniazid, pyrazinamide, ethambutol) for 6 months. Rifampicin is known to interact with the oral contraceptive pill, so patients must be warned of this side effect. Learn the common side effects of the RIPE medicines as these are easily examinable.

9. **C.** This patient's history of fever, neck stiffness, photophobia, and a headache all point to meningism. One of the signs of meningism is Brudzinski's sign, which is when the patient's hips and knees flex in response to neck flexion. Another sign of meningism is Kernig's sign, which can be elicited by flexing both the knee and the hip at 90 degrees, and then extending the knee. If this is painful, Kernig's sign is positive. Lhermitte's sign and Uhthoff's phenomenon are often seen in MS patients. Romberg's sign is present in patients with sensory ataxia.

10. **B.** This man's sudden blindness combined with his age, history of scalp tenderness, and headache point towards temporal arteritis (giant cell arteritis). The most important treatment to administer immediately in this case is prednisolone to reduce inflammation in the temporal artery and restore blood flow to the eye to prevent permanent damage. Infliximab, azathioprine, and methotrexate are not indicated for GCA. This patient is not in severe pain, so morphine is not relevant.

11. **B.** This woman's age, history of bloody diarrhoea, crampy abdominal pain, and fatigue point to a diagnosis of inflammatory bowel disease. Owl's eye intranuclear lesions are found in patients with CMV infection. Crypt abscesses, Pseudopolyps, and the absence of skip lesions would indicate ulcerative colitis. Transmural inflammation, and the presence of granulomas would point towards Crohn's disease.

12. **B.** This man's sudden onset pain in his toe which woke him up from sleep is a classic presentation of a gout flare up. Clinical examination reveals findings consistent with gout. Joint aspiration of a joint afflicted with gout would be <u>needle shaped negatively birefringent</u> crystals. The joint aspiration findings for pseudogout, which more commonly affects the knees, will be <u>rhomboid shaped positively birefringent</u> crystals. *It is worth noting that in*

practice, a warm, swollen, and tender joint is septic arthritis until proven otherwise. In this case, his dietary history, and the sudden onset of the pain point to gout.

13. **C.** This man's presentation is consistent with pulmonary embolism. His calf swelling and tenderness following immobilisation point to DVT. His sudden onset dyspnoea, chest pain, and haemoptysis indicates that the DVT has now moved to the pulmonary circulation. The gold standard for diagnosing PE is CTPA. A CXR will not show blood clots. An ECG may show some changes, but these are non-specific for PE. D-dimer will be raised in patients with DVT but is notoriously non-specific. Doppler ultrasound is useful in diagnosing DVT, not PE.

14. **B.** This man's symptoms include frequency, nocturia, hesitancy, and post-micturition dribbling. His prostate is smooth and enlarged, so the clinical picture is that of benign prostatic hyperplasia. The first line treatment for BPH is tamsulosin, an alpha blocker. Finasteride is sometimes prescribed alongside tamsulosin, but tamsulosin is first line. TURP and retropubic prostatectomy are surgical, and therefore not first line. Bladder drill is useful in patients with an overactive bladder.

15. **C.** Malaria is an infection caused by parasites in the Plasmodium genus. These parasites can be seen on a thick blood film. Blood cultures are mainly useful for detecting bacteria and viruses, not parasites. Urine MC+S, CSF, and sputum culture, are similarly not used for detection of parasitic infections.

16. **B.** This woman's sudden onset "worst headache ever" can also be described as a thunderclap headache. This, combined with her photophobia, nausea, and nuchal rigidity, point to SAH with meningism. A lumbar puncture is useful for diagnosing SAH, but only after approx. 12 hours, as this is when you can see xanthochromia (yellow CSF). This woman's symptoms started 30 minutes ago, so it is unlikely to give you a positive result. EEG, CXR, and X-Ray Head are not useful in diagnosing SAH. CT Head is therefore the most useful for diagnosing – a "star sign" would be considered a positive result for SAH.

17. **C.** This man's severe "loin to groin" pain and dysuria point towards renal stones. The first investigation for this is NCCT KUB. Abdominal X-Ray will not show renal calculi. Urinalysis may show haematuria, but this is not specific for renal colic. Serum U+E is not specific. Renal ultrasound may be offered for pregnant patients or young children to reduce radiation exposure. However, NCCT KUB is the investigation of choice in this case.

18. **D.** This woman's clinical picture of crampy abdominal pain, steatorrhea, combined with apparent anaemia (fatigue and mucosal pallor) points towards coeliac disease. Abdominal x-ray is not used in diagnosing this, neither are ERCP or Barium meals. IgA-TTG blood test is used first-line in primary care to decide whether further testing is required, but even if serology is positive, small bowel histology is required to confirm the diagnosis.

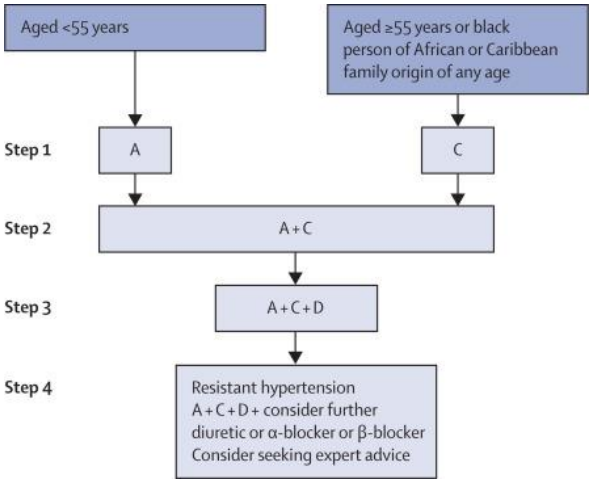
19. **E.** This woman's history of polyuria, polydipsia, and weight loss combined with her HbA1c score of 49 allows the GP to diagnose her with T2DM. The first line treatment for a newly diagnosed patient with diabetes is metformin AND lifestyle changes. The next step after this would be to add on a sulfonylurea, followed by the addition of insulin if the condition does not improve.

20. **C.** Painless haematuria in the absence of UTI is bladder cancer until proven otherwise! Especially with this man's history of working in a dye factory and smoking 10 cigarettes a day, both of which are major risk factors for bladder cancer. A UTI would present with dysuria. Renal stones can cause visible haematuria, but dysuria would almost certainly be

present. Prostate cancer could present in a similar way, but the man would have hesitancy and weak flow. Prostatitis would present with pain.

21. **C.** This man's worsening dyspnoea and a non-productive cough are non-specific. However, the finger clubbing and fine crepitations that are not cleared by coughing indicate pulmonary fibrosis. This is further aided by his history of working as a miner. COPD and asthma would not give clubbing. Pulmonary oedema would typically give pink frothy sputum. Bronchiectasis would give a very productive cough.

22. **D.** The first line treatment for hypertension in a patient of Afro-Caribbean origin is a calcium channel blocker (amlodipine). Ramipril (ACEi) is indicated in patients under 55 that are not of Afro-Caribbean origin. Candesartan (ARB) is indicated in patients who cannot tolerate ACEi. Furosemide is not a first line treatment for hypertension.



23. **B.** The painless rubbery lump that aches on drinking alcohol is a classic history for Hodgkin's lymphoma, especially when paired with the night sweats and fatigue. Acute myeloblastic leukaemia presents with breathlessness, frequent infections, and bleeding. Multiple myeloma presents with bone pain, fractures, and infections. Glandular fever would present with a fever(!), a sore throat, and extreme fatigue. CLL would present with infections, bleeding, fever, etc. Hodgkin's lymphoma is diagnosed with a lymph node biopsy that shows Reed-Sternberg cells (common exam question).

24. **D.** This first line treatment for erectile dysfunction is phosphodiesterase inhibitors (a common form is Viagra). If this does not work, the next treatment should be intracavernous injections and vacuum devices. The next step would be a penile prosthesis implantation. Finasteride, used to treat BPH, is not indicated in ED; it is actually known to cause sexual dysfunction in some men.

25. **B.** This man has facial anhidrosis (loss of sweating), ptosis, and miosis (constriction of the pupil). This triad of symptoms is known as Horner's syndrome, which occurs due to a disruption in the sympathetic chain, which arises from the spinal cord in the chest. There are a range of causes for Horner's syndrome, the most relevant in this case is a Pancoast tumour in the apex of the lung. This man is a heavy smoker, so lung cancer must be ruled out. The best initial investigation for this is a CXR. FBC will not rule out lung cancer. CT thorax, bronchoscopy, and PET-CT are used to further investigate patients with positive findings on CXR.

26. **A.** This woman's feet have grown noticeably, and she has developed gaps in her teeth, as well as prognathism. She has also developed sleep apnoea. This points to a diagnosis of acromegaly. Her headache and bitemporal hemianopia are due to her pituitary adenoma pressing on local structures, most importantly the optic chiasm. The initial investigation for acromegaly is an IGF-1 blood test. If this is positive, the next step would be an oral glucose tolerance test to confirm the diagnosis. CXR and EEG are not indicated for the diagnosis of acromegaly. Serum growth hormone (GH) levels are not reliable as GH is secreted episodically so levels may wax and wane throughout the day. Dexamethasone suppression test is used for diagnosing Cushing's syndrome.

27. **B.** This woman's presentation is classic for appendicitis. She is guarding, has rebound tenderness, and Rovsing's sign is positive, all of which further confirm the diagnosis. With an ectopic pregnancy ruled out, the gold-standard treatment would be appendicectomy. She should not be discharged as her appendix is at risk of perforation. Cholecystectomy is not indicated for appendicitis. Triple therapy is for patients with H. Pylori infection.
28. **D.** This man's age and his change in bowel habit and colour, including fresh blood is a red flag for bowel cancer, especially combined with his tiredness, and his pain after eating. Faecal occult blood is not specific for cancer, and there is visible blood in his stools, so the result would be positive anyway. Full blood count may show anaemia but is not specific for colon cancer. Faecal calprotectin is a blood test used to screen for inflammation of the bowels (commonly in IBD) but is not specific for cancer. Digital rectal examination cannot be used to confirm a diagnosis of bowel cancer. The answer is therefore colonoscopy with biopsy.

29. **C.** This man's history of a resting tremor that is worse on one side, alongside his shuffling gait, cogwheel rigidity, and bradykinesia etc., all point to a diagnosis of Parkinson's Disease. The first line treatment for PD that is affecting QoL is Co-careldopa. Levodopa is a precursor to dopamine. When used alone, it is broken down peripherally before it has any effect on the basal ganglia. It should be used in conjunction with Carbidopa, which prevents its breakdown. The combination of the two is available as Co-careldopa. Domperidone is an anti-emetic and not indicated in PD. Risperidone is an antipsychotic which can cause parkinsonism, so is not indicated in the treatment of PD.

30. **A.** This man's history of crampy exertional calf pain that improves on rest is typical of intermittent claudication. His past medical history of diabetes, hypertension, and hypercholesterolaemia further point towards this diagnosis. Intermittent claudication is caused by atherosclerosis of the arteries in the calves. Aortic dissection would present with a tearing abdominal pain that radiates to the back. Diabetic peripheral neuropathy would present with peripheral numbness and tingling. DVT would present with unilateral leg swelling. GBS presents with weakness alongside numbness.

31. **B.** This woman's history is consistent of cauda equina syndrome. MND has a more gradual onset of symptoms that affect the motor system only, so her sensation would be intact. GBS typically affects the feet first, and then gradually spreads up the limbs. An ACA infarct would usually present with unilateral leg weakness. Brown Sequard would present with one sided hemiparesis and contralateral loss of sensation.

32. **A.** Sudden onset chest pain and dyspnoea are common presentations of pneumothorax. Reduced air entry further suggests this diagnosis. In tension pneumothorax, there is contralateral mediastinal shift. In this case, this is a right tension pneumothorax. PE might present with haemoptysis. Bronchiectasis would present with a productive cough and would

not be sudden in onset. Pleural effusion would present in a similar manner, but the meniscus sign would be present on CXR.

33. **B.** This woman's symptoms are the classic presentation for an uncomplicated UTI. The usual treatment for this would be trimethoprim. However, this woman is trying for a child, and trimethoprim is teratogenic, so it is best avoided. The most suitable treatment is nitrofurantoin. The other antibiotics are not indicated as first-choice treatments for uncomplicated UTI.

34. **D.** The itchy rash on the flexor aspects of her elbows are in line with eczema, associated with her history of atopic conditions. The rash is not weeping/crusting, so antibiotics (Fucidic acid cream) are not indicated. The first line treatment for eczema is hydrocortisone cream. Prednisolone PO, loratadine PO, and tacrolimus cream are not first line treatments for eczema.

35. **B.** This is a classic case of Ramsay-Hunt syndrome. Ramsay-Hunt is a form of shingles that affects the facial nerve associated with a rash on the outer ears. As the facial nerve is affected, the patient presents with Bell's palsy – unilateral paralysis of the face including the forehead and eyelid. This condition could have been prevented with the shingles vaccine.

36. **D.** This woman's presentation is consistent with hyperthyroidism. In secondary hyperthyroidism, the pathology is at the pituitary gland, and there is an increased level of TSH, which stimulates increased production of T3/4. In secondary hyperthyroidism, both TSH and T4 levels will be above the normal range.

37. **D.** This man's symptoms are consistent with an ischaemic stroke. CT Head has been used to rule out haemorrhagic stroke. Given that his symptoms have started less than 4.5 hours ago, he is eligible for thrombolysis. The drug of choice for this is alteplase. Nimodipine is used in SAH to prevent cerebral vasospasm. Rehabilitation is not the first line immediate management but can be done at a later stage. There is no need to refer to neurosurgeons at this stage.

38. **B.** This boy's symptoms of breathlessness and a dry cough which is worse at night point to a diagnosis of asthma. Spirometry confirms an obstructive pattern, which is reversible after the administration of salbutamol (short acting beta-2 agonist). Reversibility confirms the diagnosis of asthma and excludes COPD, CF, bronchiectasis, and emphysema which are not reversible with SABA medication.

39. **C.** This man has peripheral pitting oedema. He also has pulmonary oedema, evidenced by his orthopnoea and pink frothy sputum. Both peripheral and pulmonary oedema can be caused by heart failure. His elevated NT-proBNP levels indicate heart failure. Pericarditis presents with severe chest pain. Intermittent claudication presents with leg cramping. Pulmonary fibrosis presents with a dry cough. Bronchiectasis would present with a cough productive of clear sputum.

40. **C.** This man's history includes lower back pain that is worse in the mornings and improves with exercises, which is typical of inflammatory joint disease. This excludes osteoarthritis. His back pain wakes him up at night and he has pain in his buttocks. Combined with the findings on MRI, this points to a diagnosis of ankylosing spondylitis, which can be associated with IBD, hence the Crohn's disease. Rheumatoid arthritis usually affects the hands, feet, and wrists. Juvenile idiopathic arthritis affects patients up to the age of 16.

41. **D.** This woman has Charcot's triad – RUQ pain, fever, and jaundice. Charcot's triad indicates that this woman has ascending cholangitis. Hepatocellular carcinoma would not present with sudden onset pain and fever, though jaundice may be present. Cholecystitis and biliary colic would not present with fever. Primary biliary sclerosis would not present with fever.

42. **A.** This woman has the classic triad associated with reactive arthritis – conjunctivitis, urethritis, and arthritis. Reactive arthritis is sterile inflammation of a joint following either GI/GU infection. The causative organisms are Salmonella, Shigella, Yersinia, Chlamydia, and Ureaplasma Urealyticum.

43. **C.** This girl is hyperglycaemic. Her ABG results show acidosis. Her bicarbonate is low, so it is a metabolic acidosis. Her CO2 is low, which shows respiratory compensation. To summarise, she has metabolic acidosis with respiratory compensation, evidenced by her tachypnoea. She is also vomiting, has lost weight over the past month, and is lethargic. Her age combined with the clinical picture points to a diagnosis of diabetic ketoacidosis.

44. **C.** This woman is a known asthmatic, who is likely to be taking steroids to treat her asthma. Prolonged steroid use is associated with Cushing's syndrome (excessive serum cortisol levels). This leads to truncal weight gain, striae, low mood, moon shaped face, buffalo hump, etc. The gold-standard investigation for Cushing's is an overnight dexamethasone suppression test. SynACTHen is used to investigate Addison's disease. OGTT and IGF-1 are used in diagnosing acromegaly. The glucagon test is used for investigating the anterior pituitary function in children.

45. **E.** This woman's eye pain that is made worse by movement, associated with loss of colour vision indicates optic neuritis, which is a common manifestation of MS. A diagnosis of MS can only be made if there are two lesions disseminated in time and space. Her 1-week history of leg weakness that lasted for a week may well have been the first presentation of MS. Myasthenia gravis would present with fatiguability, typically ptosis at the end of the day etc. GBS would affect the peripheries first before affecting the eyes. Cerebellitis would present with ataxia, fever, nausea. Brown-Sequard would present with unilateral paralysis and contralateral loss of sensation.

46. **B.** Renal cell carcinoma typically presents late, with haematuria being a common symptom. If the carcinoma is on the left kidney, it may compress the left renal vein. The left renal vein drains the left gonadal vein from the left testes. A blockage in the left renal vein will therefore cause congestion of the left gonadal vein and will cause a left-sided varicocele.

47. **C.** Chronic GORD can cause Barrett's oesophagus. This is a metaplastic change, from stratified squamous epithelium to simple columnar epithelium (usually only found in the intestines). Patients with Barrett's oesophagus are at increased risk of developing oesophageal adenocarcinoma.

48. **A.** This woman has AF. Her age, sex, and history of diabetes all give her a score of 1 each on the CHADSVASC system, making her total 3. A score of 2 or more indicates that a patient should be prescribed anti-coagulants to prevent stroke. Warfarin is the anticoagulant of choice for patients with AF. Ramipril, atenolol, GTN spray, and amlodipine are not anticoagulants.

49. **E.** This man's most recent INR is below the target range. He is therefore at risk of forming a blood clot and having a stroke. Starting work in a dye factory is irrelevant to his INR, as

is the partner who smokes. If he took too much warfarin, his INR would have increased. His new diet is the main reason for his low INR. Spinach and kale and other leafy green foods contain high levels of Vitamin K, which interacts with warfarin, and is known to reduce INR.

50. **A.** Osteoporosis is common in post-menopausal women. Factors which can cause osteoporosis include being underweight and leading sedentary lifestyles, as these reduce stress on the bones, and therefore lead to reduced bone mineral density (BMD). HRT is protective against osteoporosis, but she has never taken HRT. The patient takes steroids for her rheumatoid arthritis. Steroids are known to reduce BMD, and RA is associated with an increased risk of osteoporosis. Staying indoors and avoiding sunlight is associated with lower serum vitamin D levels, which increases the risk for osteoporosis. The only protective factor in this woman's history is therefore her high BMI, which increases the stress on her bones so higher BMD.