Station 2
History-Taking Skills

Case 1 | Abdominal swelling

Candidate information

You are the doctor in a general medical clinic. Mr David Brian has been referred to you by the general practitioner (GP).
Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr David Brian, age 53**
>
> Thank you for seeing Mr Brian urgently in your clinic. He gives a 4-week history of abdominal swelling. There is some discomfort from the swelling but no specific pain and he rarely drinks alcohol. On examination, he is thin, looks unwell but is not jaundiced. However, I suspect that he has ascites.
>
> Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr David Brian is a 53-year-old musician who presents with a 4-week history of progressive abdominal swelling. He has noticed his abdominal wall to be tight and as a result he has some generalized discomfort. He has no specific pain. He has noticed loss of appetite, malaise and some wasting of the muscles of his limbs. He has no associated symptoms of jaundice, ankle swelling, haematemesis, melaena, change in bowel habit or vomiting. He has no other respiratory, cardiovascular or urinary symptoms. He has an unremarkable past medical history. He rarely drinks alcohol and has never had any liver disease previously. He takes no medication except for occasional paracetamol for headaches. He has no risk factors for human immunodeficiency virus (HIV) or viral hepatitis. He has not been abroad recently and he lives with a partner. He has never smoked. He is concerned that he may have cancer.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the details of the abdominal swelling, particularly regarding the time span, if the swelling was progressing, whether the swelling is generalized or focal and any associated pain or discomfort
- other gastrointestinal symptoms which may indicate liver cirrhosis or abdominal malignancy, e.g. haematemesis, melaena, jaundice, change in bowel habit, inguinal lymphadenopathy

- systemic symptoms, e.g. loss of weight and appetite, fever, breathlessness as a result of the ascites and other clues to a malignancy elsewhere
- risk factors for liver cirrhosis, e.g. excessive alcohol consumption, viral hepatitis, drug induced, autoimmune
- other causes of ascites, e.g. symptoms suggestive of acute or chronic pancreatitis, intra-abdominal sepsis/infection, congestive cardiac failure, hepatic vein thrombosis, nephrotic syndrome and tuberculosis
- any exposure to asbestos (peritoneal mesothelioma is a rare cause of malignant ascites)
- the impact of the illness on him and his work
- the concerns of the patient – if the patient is particularly concerned that he may have a malignancy then this must be addressed appropriately by the candidate (i.e. do not be evasive)
- why he thinks he might have a malignancy – is there a family history? Did his GP mention the possibility? Tell him in an honest and sensitive manner that cancer is part of the differential diagnosis but his abdominal swelling could also be due to one of many other causes. The way to find out for sure would be to admit him and carry out the necessary tests without delay.

Reassure him that you will let him (and his family) know as soon as any of the test results are back.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- develop a list of possible differential diagnoses
- have a list of investigations
- explain the possible causes of the illness to the patient and explain the need to admit.

3. Discussion related to the case

- Causes of abdominal swelling include obesity, gaseous distension, pregnancy in females, intra-abdominal masses, e.g. ovarian in females, and fluid, i.e. ascites.
- In liver disease, ascites indicates a chronic or subacute disorder and does not occur in acute conditions (e.g. uncomplicated viral hepatitis, drug reactions, biliary obstruction). The most common cause is cirrhosis, especially from alcoholism. Other hepatic causes include chronic hepatitis, severe alcoholic hepatitis without cirrhosis and hepatic vein obstruction (Budd–Chiari syndrome). Portal vein thrombosis does not usually cause ascites unless hepatocellular damage is also present.
- Non-hepatic causes of ascites include generalized fluid retention associated with systemic disease (e.g. heart failure, nephrotic syndrome, severe hypoalbuminaemia, constrictive pericarditis) and intra-abdominal disorders (e.g. carcinomatosis, tuberculous peritonitis). Hypothyroidism occasionally causes marked ascites and pancreatitis rarely causes large amounts of fluid (pancreatic ascites). Patients with renal failure, especially those on haemodialysis, occasionally develop unexplained intra-abdominal fluid.
- A diagnostic tap of 50 mL should be obtained and sent for cytology, microscopy, alcohol- and acid-fast bacilli (AAFB) and amylase. The presence of haemorrhagic ascites is in favour of malignancy, acute pancreatitis and abdominal trauma. Straw-coloured ascites is more commonly found in cirrhosis, infective causes, congestive cardiac failure, nephrotic syndrome and hepatic vein obstruction.
- A neutrophil count of over 250 cells per cubic millimetre is indicative of an underlying bacterial peritonitis, justifying broad-spectrum intravenous antibiotic therapy in the presence of a fever.
- This case favours a diagnosis of a malignancy and the investigation of choice would be a computed tomography (CT) scan of the abdomen.
- Treatment of ascites in a patient with liver cirrhosis aims to reduce sodium intake and increase the renal excretion of sodium with a careful combination of diuretics and fluid restriction.

Comments on the case

This case tests the candidate's ability to generate a list of differential diagnoses for ascites. The patient is unwell and must be admitted for tests.

Case 2 | Ankle swelling

Candidate information

You are the doctor in a cardiology clinic. Miss Vicky Daniels is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Miss Vicky Daniels, aged 29

Thank you for seeing Vicky Daniels who works as a domestic at the local law courts. She has had asthma for 2 years, treated with budesonide and bricanyl inhalers, and also a similar length history of chest pain. However, her breathlessness and pain have worsened over the last 2 months and she now has ankle swelling. I would appreciate your help.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Vicky Daniels is a 29-year-old domestic cleaner at the local law courts who has had a 2-year history of breathlessness and chest pain. Up to 2 years ago she was reasonably fit and well but she remembers that, after a lower respiratory chest infection, she began to get more breathless with a feeling of tightness in the chest. At that time it was felt she may have asthma and, as there is a strong family history, she was started on budesonide 200 µg bd and bricanyl (prn) turbohalers. Unfortunately, her dyspnoea has progressed, so much so that walking upstairs or up a slight incline is a real effort. The chest pain is usually central, non-pleuritic, without radiation and is occasionally exertional. It usually eases with resting. She also complains of extreme tiredness and ankle swelling up to the lower ends of the tibiae over the last 2 months. She has had to stop working. There are no obvious relieving or precipitating factors or any known allergies to the common household allergens. She has no orthopnoea, syncope, palpitations, cough, sputum, haemoptysis, rash or arthropathy and there are no gastroenterological or neurological symptoms. There is no previous history of pulmonary emboli, congenital heart disease, chronic lung disease, scleroderma, systemic lupus erythematosus (SLE) or HIV infection. She takes no medication apart from the inhalers. She has never smoked and she drinks on occasions. She lives with her mother who also has asthma. There are no pets in the house. She is obviously very worried about her progressive breathlessness and is desperate for help.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the chronology of the symptoms
- the exact features of the dyspnoea and the chest pain with particular reference to her exercise ability. Does the chest pain sound anginal or pleuritic (pulmonary emboli)?
- the recent onset of ankle swelling; which leg or both legs, how far up the leg(s), and whether putting on shoes is difficult
- other respiratory symptoms, e.g. haemoptysis (chronic pulmonary emboli), chronic cough and sputum (chronic lung disease, e.g. bronchiectasis), cardiovascular symptoms, e.g. syncope and palpitations (congenital heart disease, mitral valve disease)
- a full asthma history – is this really asthma? Whether there is any evidence of diurnal symptoms of cough and wheeze, allergy to common household allergens (e.g. cats, house dust mite, pollen), if the inhalers have helped the symptoms, and on what basis did the GP diagnose asthma (serial peak flows versus clinical history)
- any past medical history of congenital heart disease, mitral valve disease, chronic lung disease, thrombotic disease, collagen vascular disease such as scleroderma and SLE
- drug history, e.g. appetite suppressants such as fenfluramine
- family history of primary pulmonary hypertension
- the impact of the illness on her life and her work
- any recent air flights which may have exacerbated symptoms (pregnancy does as well in primary pulmonary hypertension)
- her ideas as to what may be going on, any particular concerns she has and what her expectations are from this consultation.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assemble a list of differential diagnoses
- have a list of investigations to be arranged urgently and explain these to the patient
- address any concerns
- arrange follow-up as soon as possible to discuss the results.

3. Discussion related to the case

- This case tests the ability of the candidate to have a list of differential diagnoses for ankle oedema, breathlessness and chest pain in a young, non-smoking, previously fit woman. The possibilities are primary pulmonary hypertension or secondary pulmonary hypertension, e.g. recurrent pulmonary embolism, chronic lung disease, e.g. bronchiectasis, congenital heart disease, collagen vascular disease, e.g. scleroderma or SLE, HIV infection, drug induced, especially from weight-reducing appetite suppressants, or other rarer causes, e.g. veno-occlusive disease.
- In the absence of any secondary causes, this case is most likely to be primary pulmonary hypertension. Investigations would include chest X-ray showing enlarged central pulmonary arteries and clear lung fields, electrocardiogram (ECG) revealing right axis deviation and right ventricular hypertrophy, an echocardiogram demonstrating right ventricular enlargement, a reduction in left ventricular cavity size, and abnormal septal configuration consistent with right ventricular pressure overload, full lung function testing for impaired diffusion and hypoxaemia, ventilation–perfusion scan to rule out pulmonary emboli and cardiac catheterization (with care) to characterize the disease and to exclude an underlying cardiac shunt as the cause.
- A definitive diagnosis of pulmonary hypertension requires right heart catheterization to measure the pulmonary artery pressure – a pressure more than 25 mmHg at rest confirms the presence of pulmonary hypertension. Additionally, patients with idiopathic pulmonary arterial hypertension will have a pulmonary capillary wedge pressure (PCWP) less than 15 mmHg.
- The management is challenging and the patient should be looked after by a cardiologist with a specialist interest. Reduction in pulmonary vascular resistance with short-acting vasodilators, e.g. nitric oxide, intravenous adenosine or intravenous prostacyclin may determine who will respond better to high-dose oral calcium channel blockers, e.g. nifedipine and diltiazem (known as a vasoreactivity test).
- Treatment options for patients with pulmonary hypertension consist predominantly of vasodilatory drugs. Examples of these are prostacyclins (e.g. epoprostenol, treprostinil), endothelin receptor antagonists (e.g. bosentan) or phosphodiesterase 5 inhibitors (e.g. sildenafil, vardenafil or tadalafil). In those who

do not respond, heart and lung transplantation may need to be considered.

- Anticoagulation is also indicated in patients with idiopathic pulmonary hypertension in addition to that due to chronic thromboembolism.

Comments on the case

This lady presents with three symptoms, i.e. dyspnoea, chest pain and ankle swelling. Hence the candidate must be prepared to take *three* clear histories.

Case 3 | Asymptomatic hypertension

Candidate information

You are the doctor in a general medical clinic. Mr Tom Walker is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Tom Walker, aged 49

Thank you for seeing Mr Walker whom I found to have a blood pressure of 180/95 mmHg. I started him on bendroflumethiazide 2.5 mg od but his BP continues to be elevated. He smokes 15 cigarettes a day and drinks 16 pints at the weekends. Past medical history includes anxiety attacks and mild asthma for which he takes a salbutamol inhaler on a prn basis. He is a self-employed painter and decorator. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Tom Walker is a 49-year-old, slightly overweight painter and decorator who is currently asymptomatic with no relevant symptoms such as chest pains, palpitations, headache, dyspnoea, blurred vision, sweating, tremors, weight change or urinary problems. On a recent visit to the GP for a Well-Man clinic appointment, a blood pressure (BP) of 180/95 mmHg was recorded and he was started on bendroflumethiazide 2.5 mg od. Subsequent BP measurements by the GP have shown no improvement. Mr Walker, however, does admit to poor compliance with the bendroflumethiazide due to impotence being a side-effect. He does occasionally have episodes of anxiety that may manifest as irritability, difficulty in sleeping and worry. These have been amplified by a recent reduction in contractual painting and decorating work. He does also admit to high levels of anxiety when visiting his GP. Other past medical history includes mild asthma usually triggered by coryzal illnesses but at present this is stable without any nocturnal symptoms and he rarely needs to take his inhaler. He tends to lead a sedentary lifestyle, smokes 15 cigarettes a day and drinks heavily, particularly at the weekends, about 8 pints of beer a day. He lives with his wife and has two children who have left home. He does admit that the impotence persists even when the bendroflumethiazide is not taken and that this has caused some marital strife.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- whether a raised blood pressure has been found before. (If a young woman presents with a history like this, do not forget to ask about pregnancy-induced hypertension)
- any relevant symptoms, e.g. headache, chest pains, palpitations, dyspnoea, ankle oedema, blurred vision, sweating, tremors, weight change, urinary symptoms
- symptoms of an anxiety disorder and obvious triggers, e.g. anxiety when meeting doctors
- previous medical history including ischaemic heart disease, hypercholesterolaemia, renal disease, peripheral vascular disease, diabetes mellitus, endocrine and thyroid disorders
- family history of hypertension, heart disease, hyperlipidaemia and endocrine disorders
- drug history, especially the bendroflumethiazide with particular reference to side-effects (ask about the impotence and its impact), corticosteroids, sympathomimetics, liquorice
- the use of the salbutamol inhaler – overusage causing shakes and tremors
- detailed smoking and alcohol history
- lifestyle, i.e. physical exercise, diet
- work history
- social history, particularly any marital problems.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- be aware of the possible causes of the hypertension
- decide if anxiety or non-compliance with antihypertensives or the 'white coat' effect may be contributing to the hypertension
- appreciate the reasons for non-compliance, particularly the side-effects of the bendroflumethiazide
- have an understanding of any marital strife and work problems that may be exacerbating the anxiety.

3. Discussion related to the case

- This case tests the ability of the candidate to judge the possible causes of raised blood pressure, i.e. 'white coat' induced, anxiety provoked, essential or secondary causes, e.g. renal (diabetic nephropathy, chronic glomerulonephritis, adult polycystic disease, renovascular disease and chronic tubulointerstitial nephritis), endocrine (Conn's syndrome, adrenal hyperplasia, phaeochromocytoma, Cushing's syndrome and acromegaly), cardiovascular (coarctation of the aorta) and drug induced (oral contraceptive pill, steroids).
- The candidate must be able to (a) address the issues of compliance, (b) assess other cardiovascular risk factors, (c) discuss moderating alcohol consumption with smoking cessation and improving health, e.g. diet and exercise, (d) probe sensitively into the circumstances generating the anxiety and (e) discuss the importance of blood pressure control; this should encourage improved compliance.
- The candidate must have a plan for investigations such as urea and electrolytes (U&E), lipids, urine dipstick, fundoscopy, chest X-ray, ECG and 24-h ambulatory blood pressure monitoring.
- There may be no relevant symptoms unless hypertension has resulted in end-organ damage.
- The candidate must be able to discuss with the examiners (a) the interpretation of 24-h ambulatory BP monitoring, (b) the World Health Organization (WHO) criteria for defining hypertension with or without the presence of diabetes, (c) the impact of the Framingham USA study on outcomes, (d) the causes of secondary hypertension, e.g. renal, endocrine, drug induced and pregnancy induced, (e) the complications of hypertension, (f) relevant retinal changes seen on fundoscopy, (g) drug treatment including side-effects, and (h) the management of malignant hypertension.
- Follow-up will have to be arranged to discuss the results of the 24-h ambulatory measurements. Anxiety control, e.g. relaxation training from a psychologist, may be considered.

The National Institute for Health and Clinical Excellence (NICE) and the British Hypertension Society have produced joint guidelines: 'Hypertension: management of hypertension in adults in primary care' (Clinical Guideline 34, August 2011: www.nice.org.uk/nicemedia/pdf/cg034quickrefguide.pdf). Key points from these guidelines and, specifically, changes from earlier guidelines are as follows.

- More importance should be given to ambulatory blood pressure monitoring (ABPM) or home readings in the diagnosis and monitoring of patients with hypertension.
- If the BP in clinic is >140/90, offer the patient ABPM before confirming the diagnosis. The ABPM readings should consist of the average of 14 readings, taken

twice a day during the patient's waking hours for 7 days.

- The categories of hypertension are defined as follows:
  - Stage 1: clinic BP >140/90 mmHg **and** ABPM average >135/85 mmHg
  - Stage 2: clinic BP >160/100 mmHg **and** ABPM average >150/95 mmHg
  - Severe: clinic systolic BP >180 mmHg **or** clinic diastolic BP >110 mmHg.
- Treatment should be advised for patients under 80 years with stage 1 hypertension and any evidence of end-organ damage or other cardiovascular risk factors. Patients of any age with stage 2 hypertension should be offered treatment.
- Patients <55 years: offer an angiotensin-converting enzyme (ACE) inhibitor (or angiotensin II receptor blocker [ARB] if ACE inhibitor is poorly tolerated). If additional treatment is required, add in a calcium channel blocker (CCB) or, if not tolerated, a thiazide-like diuretic.
- Patients >55 years or of Afro-Caribbean origin of any age: CCB or thiazide-like diuretic (if CCB not tolerated). If additional treatment is required, add in an ACE inhibitor (or ARB if Afro-Caribbean).
- Step 3 treatment should be an ACE inhibitor (or ARB), CCB and thiazide-like diuretic for all patients. If further treatment required above this, consider low-dose spironolactone (keep a close eye on potassium levels) or an α-blocker.
- β-Blockers are not recommended as first-line treatment but if β-blockers are started and additional treatment is required, choose a CCB rather than a thiazide diuretic (to reduce risk of developing diabetes mellitus).
- If a thiazide-like diuretic is being started, chlorthalidone (12.5–25 mg od) or indapamide (1.5 mg slow release od or 2.5 mg od) is preferred over bendroflumethiazide or hydrochlorthiazide.
- In patients under 40 years, consider investigation for secondary causes of hypertension and careful assessment for target end-organ damage (e.g. retinopathy, nephropathy).
- Lifestyle advice should be offered at initial diagnosis and periodically reviewed during subsequent visits.
- The targets to aim for on treatment are:
  - <80 years: <140/90 mmHg (or <135/85 on home BP monitor)
  - >80 years: <150/90 (or <145/85 on home BP monitor).

Comments on the case

This is a common case where a patient may not have a specific symptom. 'Hypertension' is not a presenting complaint, and the candidate must state that the patient is asymptomatic when presenting the case to the examiners. A lot of patients attend specialized clinics after an objective measurement finding, e.g. raised blood pressure, abnormal urine analysis or an abnormal chest X-ray. However, this case tests the candidate's ability to scrutinize and explore more deeply into the history and particularly about hidden problems, i.e. the impotence, the psychology of non-compliance (commonly neglected by candidates), the complex social background and other health issues that would facilitate a primary prevention programme.

Case 4 | Back pain

Candidate information

You are the doctor in a general medical clinic. Mrs Janet Reardon is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Janet Reardon, aged 63

Thank you for seeing this lady. She has complained of continuous backache for the last 6 weeks. She is otherwise well. I have tried her with co-codamol without much success. I wonder if she has osteoporosis.

Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Janet Reardon is a 63-year-old divorcée who previously worked as a bank clerk. She gives a 6-week history of backache. There was no obvious precipitant to this pain, e.g. falls, trauma, lifting a heavy weight, etc. The pain is localized to the mid-thoracic area and radiates circumferentially along one of the ribs on the right side and around to the front. The pain is sharp and constant and worse on coughing, sneezing and twisting. The pain interrupts her sleep if she twists in bed and there has been minimal relief from co-codamol. There are no pains in her joints, especially the neck, hands and hips. There is no history of any sciatic pain. There are no other symptoms such as fever, malaise, weight loss or any respiratory or abdominal symptoms although she does feel more tired than usual. She has no past history of note apart from one admission for a lower respiratory tract infection 5 years ago. She has not had an oophorectomy. She smokes 20 cigarettes a day and does not drink alcohol. She does not take any medication and in particular has never taken oral corticosteroids. She has been postmenopausal for 14 years and never took hormone replacement therapy (HRT). She lives alone in a bungalow. She is concerned that she may have osteoporosis as there is a strong family history of this (mother and elder sister).

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the full details of the backache, especially the site of the pain, nature and character, radiation, precipitating and relieving features and any history of trauma or falls
- if the pain is worse after coughing, sneezing or movement
- if there are any pains in the other joints or evidence of sciatica, claudication or neck pain
- other symptoms, e.g. fever, malaise, weight loss, respiratory or abdominal symptoms
- any symptoms suggestive of neoplasia
- any history of trauma
- any details in the history suggesting the possibility of risk factors for osteoporosis, e.g. early menopause, history of oophorectomy, family history of osteoporosis, smoking, nutrition, corticosteroid therapy and other possible endocrine or rheumatological diseases
- drug history including HRT
- smoking history
- a detailed account of the impact of the pain on her life
- particular concerns, especially the possibility of a diagnosis of osteoporosis.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- determine a diagnosis of osteoporosis with or without vertebral body collapse/compression, and discuss differentials such as intervertebral disc disease (e.g. herniation), metastatic bone disease, myeloma, Paget's disease, infection (e.g. septic arthritis or chronic brucellosis)
- confirm the diagnosis by arranging the appropriate investigations as mentioned below
- address the pain control
- discuss the possibilities of osteoporosis and the therapeutic options (pharmacological and non-pharmacological)
- discuss smoking cessation, diet and general exercise.

3. Discussion related to the case

- This case tests the ability of the candidate to take a detailed history, to consider the possibility of osteoporosis and to guide the history around the risk factors for osteoporosis. Another possibility, which may commonly present this way, is intervertebral disc disease. It is important to explore the possibility of metastatic disease, especially from a pulmonary or breast malignancy; this patient is a heavy smoker. Myeloma is probably unlikely but still must be acknowledged as a possibility.
- A plan of investigations should include biochemical markers, e.g. bone profile, serum immunoglobulins, full blood count (FBC), liver function tests (LFTs) and X-rays of the thoracic and lumbar spine which may show fractures (though unreliable to evaluate bone density). Bone densitometry such as dual-energy X-ray absorptiometry (DEXA) scanning can be used to investigate osteoporosis and determine its severity. An isotope bone scan may be considered to look for fractures and metastatic deposits. If bone densitometry is normal, a magnetic resonance imaging (MRI) scan of the thoracic and lumbar spine should be considered to look for intervertebral disc disease.
- For discussion, the candidate must be able to define osteoporosis as a bone density of more than 2.5 standard deviations below the young adult mean value for individuals matched for sex and race (known as the T-score). For premenopausal women, the risk of fractures is lower, in the absence of other risk factors, so it is more appropriate to use the term 'low bone mineral density (BMD)' instead of osteopenia or osteoporosis. The former is defined as a BMD more than 2.0 standard deviations below the mean for age-, sex- and ethnicity-matched controls (known as a Z-score).
- Although measurement of BMD is the gold standard to diagnose osteoporosis, it may also be diagnosed clinically when a patient presents with a fragility fracture in the presence of other risk factors.
- The candidate must be able to discuss the risk factors, investigations and management, especially pain control, lifestyle factors (i.e. diet, exercise, smoking cessation) and the role of oestrogen therapy and bisphosphonates.
- The decision on whether or not to treat a woman with osteoporosis should be made after determining if she is at high risk of a fracture. There are tools such as the Fracture Risk Assessment Tool (FRAX) which will give the probability of an individual sustaining an osteoporosis-related fracture in the next 10 years using the femoral neck BMD and other clinical risk factors.

- Management of osteoporosis includes risk factor reduction, particularly reviewing corticosteroid therapy, and prevention of falls. A large body of clinical trial data indicates that various types of oestrogens reduce bone turnover, prevent bone loss and induce small increases in bone mass of the spine, hip and total body. The effects of oestrogen are seen in women with natural or surgical menopause and in late postmenopausal women with or without established osteoporosis.
- The effect of oestrogens on fracture frequency is less well determined. Studies have shown that women taking oestrogen replacement have a 30% decreased risk of hip fracture and 30–50% decreased risk of spine fracture. The beneficial effect of oestrogen is greatest among those who start replacement early and continue the treatment; the benefit wanes after discontinuation such that there is no residual protective effect against fracture by 10 years after discontinuation.
- Recently, a large randomized controlled trial involving over 16,000 postmenopausal women (the Women's Health Initiative trial) showed that, compared to placebo, combined oestrogen-progesterone hormone replacement therapy reduced the risk of hip fractures and colonic cancer but increased the risks of coronary heart disease, stroke, breast cancer and dementia.
- Bisphosphonates, often together with calcium and vitamin D supplementation, remain the first-line treatment for osteoporosis. Bisphosphonates reduce bone resorption, increase bone mass and reduce the incidence of osteoporosis-related fractures.
- Other treatments for osteoporosis include selective oestrogen receptor modulators (e.g. raloxifene), recombinant parathyroid hormone, RANK ligand antibodies (e.g. denosumab) and calcitonin. The candidate should be familiar with the mechanisms of action and indications for the above-mentioned drugs.

Comments on the case

In this case the examiners will expect the candidate to take a detailed history of the backache, including the impact of the symptoms on the patient's life, to discuss osteoporosis (investigations, management, etc.) whilst acknowledging the possibility of other diagnoses. Do not assume the patient has osteoporosis just because this is what the GP is considering as most likely; keep an open mind and do not forget about pathological fractures. The candidate also needs to explore the patient's fears about osteoporosis and so the consultation will involve discussing a plan of management with some counselling on the subject.

Case 5 | Breathlessness

Candidate information

You are the doctor in a respiratory clinic. Mr Alan Smith is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Alan Smith, aged 76

Thank you for seeing this ex-smoker who has had asthma for 5 years. Recently he has been complaining of increasing breathlessness and wheeze. His peak flow was 150 L/min in the surgery. He is on beclomethasone and salbutamol inhalers. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Smith is a 76-year-old man who first presented to his GP 5 years ago after a lower respiratory tract infection manifesting as wheeze, purulent sputum and breathlessness. Then, his peak flow rate was 170 L/min. He continued to complain of breathlessness and wheeze and he was started on regular salbutamol and beclomethasone inhalers by the GP after he suspected asthma. He had not been seen again at the practice until 4 weeks ago but now he is complaining of breathlessness after 50 yards, difficulty with stairs, and inability to walk to the Post Office to collect his pension. Other symptoms include wheezing on exertion, mucoid sputum every day and fatigue. The symptoms of wheeze and breathlessness do not vary during the day. He gets woken twice at night due to the cough. He has no chest pain or ankle swelling. There are no obvious triggers such as pollen, house dust mite, cat dander, pollution, smoke or cold air. He had one infective exacerbation last year but he did not visit his GP for help. His past medical history includes a duodenal ulcer 15 years ago. He has no known drug allergies and he has no pets at home. He lives with his wife in a terraced house and she does most of the housework and shopping. He has previously worked as a welder and smoked 20 cigarettes a day from the age of 15 until 5 years ago. He does not drink alcohol. His main concerns are that he is getting more and more breathless without much relief from the inhalers and that he is unable to go out to meet his family and friends for social events.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how his chest complaints first presented 5 years ago
- his premorbid state before this, i.e. exercise tolerance, symptoms of cough/wheeze/sputum, activities of daily living
- how rapidly his symptoms have deteriorated
- a detailed account of the present symptoms, i.e. breathlessness (over what distance on the flat before he stops, up an incline), ability to do stairs, cough/wheeze/sputum and their variability during the day
- an idea of the number of exacerbations per year, winter exacerbations, ?worse after coryzal illnesses
- any allergic factors, e.g. triggers such as pollen, exercise, smoke, pets, house dust mite; history of allergic rhinitis and/or eczema
- inhaler history; type (i.e. multidose inhaler versus turbohaler versus accuhaler) and technique. Previous use of prednisolone and, if so, any improvements in symptoms and any side-effects
- occupational history, any exposure to agents at work, e.g. isocyanates, platinum salts, hardening agents, soldering fluxes
- smoking history (calculate the pack-years, i.e. one pack of 20 cigarettes per day for 1 year is one pack-year), age when started
- drug history, e.g. use of non-steroidal anti-inflammatory drugs (NSAIDs), diuretics, etc.
- impact of disease both physical and psychosocial, i.e. on dressing, washing, housework, sleep, how often he gets out of the house, ability to attend social events, the impact on the family, embarrassment of using inhalers, especially in public
- his concerns, e.g. does he panic when he cannot get his breath, does he expect his chest to get worse, does he feel embarrassed by having to use inhalers in public?

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- explain what chronic obstructive pulmonary disease (COPD) and asthma are
- address the worsening symptoms
- confirm the correct diagnosis by arranging the appropriate investigations
- consider different inhaler devices if the inhaler technique is poor
- advise on general health such as exercise, nutrition and vaccination (influenza and pneumococcal).

3. Discussion related to the case

- This case tests the ability of the candidate to differentiate the diagnosis of asthma from that of COPD. COPD typically presents with progressive symptoms (usually in the presence of a smoking history) without variable daily symptoms and with no obvious allergen allergy, i.e. triggers that are typical in asthma. A proportion of patients may have both COPD and asthma. The suboptimal peak flow on its own should not lead to the diagnosis of asthma.
- The candidate should have a plan of investigations, e.g. chest X-ray, full blood count, ECG, full lung function tests including spirometry, lung volumes, diffusion, flow volume loops, reversibility of forced expiratory volume in 1 sec (FEV_1) to salbutamol, oxygen saturation on air, serial peak flows and follow-up to discuss these results.
- The previous British Thoracic Guidelines on COPD were recently superseded by the NICE COPD Guidelines (2010; www.nice.org.uk/nicemedia/pdf/CG012_niceguideline.pdf). The reader is advised to be familiar with the complete guidelines. Summary points from it include the following.
  - A diagnosis of COPD should be considered in people over 35 years, with a history of smoking who present with dyspnoea on exertion, chronic cough with sputum production and recurrent wheeze or 'bronchitis' episodes, especially during winter time.
  - Airflow obstruction, which is usually **not** fully reversible in COPD, should be confirmed on post-bronchodilator spirometry. The postbronchodilator FEV_1 (% predicted) can also be used to classify the severity of COPD.
  - Patients with COPD would be expected to have a FEV_1/forced vital capacity (FVC) ratio <0.7.
  - All patients with COPD should be advised to stop smoking and the necessary advice and support provided at every stage.
  - First-line treatment is a short-acting bronchodilator inhaler to be used as required.
  - If the patient still remains breathless or has exacerbations despite the above, second-line treatment is as follows.

(a) FEV_1 ≥50% predicted: either long-acting β2-agonist inhaler (e.g. salmeterol) **or** long-acting muscarinic antagonist inhaler (e.g. tiotropium).
(b) FEV_1 <50% predicted: either long-acting β2-agonist inhaler in combination with an inhaled corticosteroid (i.e. combined preparations) **or** long-acting muscarinic antagonist inhaler.
(c) The long-acting muscarinic antagonist inhaler can be offered **in addition** to a combination inhaler if they remain breathless on the above, regardless of their FEV_1.

- Markers like the BODE Index can be used to assess prognosis. This consists of: Body Mass Index (BMI), airflow Obstruction (using FEV_1 measurement), Dyspnoea (using MRC Dyspnoea Scale) and Exercise tolerance.
- COPD patients who should be considered for long-term oxygen therapy include those with very severe airways obstruction (FEV_1 <30%), oxygen saturation levels <92% on air, cyanosis, peripheral oedema, raised jugular venous pulse, polycythaemia.
- Assessment should be done on arterial blood gases, taken at least 3 weeks apart, on patients with stable COPD already on maximum medical treatment.
- Long-term oxygen therapy (LTOT) should be offered to those with (1) PO_2 <7.3 kPa or (2) PO_2 7.3–8.0 kPa and the presence of pulmonary hypertension, secondary polycythaemia, nocturnal hypoxia or peripheral oedema (regardless of PCO_2 levels).
- Patients on LTOT are usually given it for at least 15 h a day at an oxygen flow rate set between 2 and 4 L/min.
- The presence of hypercapnia is not a contraindication to providing LTOT in a patient who fulfils the criteria for it. However, the patient should be encouraged to remain on the prescribed flow rate.
- Short-burst oxygen therapy for breathlessness in the absence of any hypoxia is not recommended.
- Assessments for LTOT should be carried out by trained respiratory practitioners and not prescribed without any evidence of oxygen measurements. Follow-up reassessments are advised as some patients do not require life-long therapy in the presence of a clinical improvement in their respiratory long-term condition.

- In deciding whether to treat a patient at home or in hospital during an exacerbation, one should ask if the patient is unable to cope at home, whether there is cyanosis, reduced consciousness, moderate breathlessness, poor level of activity and poor social circumstances (all of which should favour hospital admission). If necessary, supplementary oxygen should be given to keep the SpO_2 within the individualized target range. Nebulized bronchodilators and oral prednisolone 30 mg for 7–14 days should be given. Antibiotics should be considered in the presence of two or more of increased breathlessness, increased sputum volume or purulent sputum.
- Asthma may be differentiated from COPD if the following are present (although there may be an overlap of both conditions in some patients): FEV_1 improves by more than 400 mL after bronchodilators or 30 mg prednisolone daily for 2 weeks; serial peak flow measurements show ≥20% diurnal or day-to-day variability.
- Patients with stable asthma are treated according to the five-step guidelines (British Thoracic Society). Essentially, step 1 is the occasional use of relief bronchodilators, step 2 is the addition of a low-dose corticosteroid inhaler, step 3 is the addition of a long-acting β-agonist **and/or** increasing the dose of the corticosteroid inhaler, step 4 is high-dose corticosteroid inhalers and consideration of other drugs like a leukotriene receptor antagonist or sustained-release theophylline and step 5 is starting oral steroids. The best possible results aimed for are reduction in the symptoms, reduced need for relieving bronchodilators and reduced limitation in activity, and an improvement of the peak flow rate with minimal side-effects from medication.
- More recently, the British Thoracic Society and the Scottish Intercollegiate Guidelines Network (SIGN) have updated their asthma guidelines (May 2011) with latest evidence on the monitoring of asthma and pharmacological management, which should be referred to for a full description of the step-wise treatment approach to asthma.
- Checking inhaler technique is essential in the management of patients with COPD and asthma. Typically the most common inhaler, the metered dose inhaler (MDI), has the following instructions: (1) remove cap and shake inhaler, (2) breathe out gently, (3) put mouthpiece in mouth (with the inhaler upright) and at the start of inspiration (slow and deep), press the canister down and continue to inhale deeply, (4) hold breath for 10 seconds, then breathe out and (5) wait about 30 sec before taking another inhalation. Other inhalers include the turbohaler, autohaler and

accuhaler. The candidate will be expected to acknowledge the importance of chlorofluorocarbon (CFC) versus non-CFC inhalers.

Comments on the case

The candidate will be expected to take a full history to decide if the patient is describing asthma or COPD. It is not uncommon for a patient to be labelled as asthmatic when in fact he has COPD. Do not be swayed by the GP's previous diagnosis of asthma – keep an open mind. Patients with COPD often have a wheeze and this patient really presented 5 years ago with an exacerbation of COPD rather than asthma. The candidate will be expected to address the patient's concerns and to have a clear idea about management.

Case 6 | Burning of the feet

Candidate information

You are the doctor in the diabetes clinic. Mr Jeremy Duncunson is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Jeremy Duncunson, aged 52

This man complains of burning pains in his legs which stop him from sleeping. He has type 2 diabetes mellitus and his last HbA1c was high at 8.5%. Recently, he has been found to have hypertension with a BP of 176/78 mmHg, proteinuria and a raised cholesterol (6.5 mmol/L with HDL-cholesterol 2.2 mmol/L and triglycerides 2.33 mmol/L). His current medication is metformin 500 mg tds and aspirin od. I have started him on lisinopril and simvastatin. Unfortunately he drinks excessively.

Please advise on diagnosis and management.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Jeremy Duncunson is a 52-year-old unemployed previous car attendant who has had diabetes mellitus for the last 8 years. His most recent problem is a 4-month history of pains in both feet and shins. These pains are burning and stabbing in nature and are at their worst at night whilst in bed. He finds sleeping quite irksome with his legs covered, the pressure of the bedclothes and the heat of the bed. Recently, this has been keeping him awake for half the night. During the day he is aware of the burning but, if he is occupied, he manages to ignore it. Tight socks and shoes also aggravate the pain. The pain is not exacerbated by walking and he has found no comfort from simple analgesics. He has no weakness in his legs and no obvious feeling of 'walking on cotton wool' or losing his balance if walking in the dark. He has no ulcers on his feet. He does not have any other systemic symptoms of note. He attempts to follow a diabetic diet and he tests his own glucose levels at home which have been around 9 mmol/L. He is treated with metformin 500 mg three times a day and additionally he takes aspirin. He does not have any past history of coronary artery disease but recently the GP has found a raised blood pressure, a high blood cholesterol level and protein in the urine. For these he has been started on

lisinopril and simvastatin. He attends the eye clinic but has not needed laser therapy. He lives alone and stopped smoking 5 years ago (15 cigarettes a day) but he does drink on average about 4 pints a night at the local public house. His excessive alcohol intake does not compromise his diet and he is not malnourished. He is concerned about the feet, particularly about the possibility of vascular disease. He is also concerned about the protein in the urine as the GP has told him that this may be a sign of diabetic kidney disease.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the exact details of the burning pains in the feet; which foot, which part, shins, calves
- when the pains are worse, i.e. night time, walking, tight shoes/socks; whether he has to pull away the bed sheets to relieve the pain and is there a pressure effect from the bed clothes. ?any relief from simple analgesics
- other symptoms such as muscle weakness, wasting, sensory problems, e.g. a feeling of walking on cotton wool, losing balance when walking in the dark or when he has his eyes closed
- impact on life, e.g. sleep quality
- other neurological symptoms, any backache
- any history of peripheral vascular disease. Any suggestion of leg claudication?
- the diabetic history; has control worsened or improved?
- smoking, alcohol and nutrition history (vitamin deficiencies)
- other systemic symptoms suggestive of a neoplasm
- drug history, including those that can cause peripheral neuropathy, e.g. isoniazid, chemotherapy drugs
- social history
- the concerns of the patient. especially with regard to the proteinuria.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- give a differential diagnosis including neuropathic pain (probably in this case due to poorly controlled diabetes)
- stress the importance of treating the blood pressure and cholesterol levels as a primary prevention measure and to discuss possible targets
- discuss with the patient possible medical treatments for the neuropathy, including improved glycaemic control, foot care
- advise on strategies to cut down his alcohol consumption.

3. Discussion related to the case

- A clinical diagnosis of neuropathy is usually sufficient but if in doubt then nerve conduction studies could be considered. Investigations for other non-diabetic causes of neuropathy should be considered, e.g. alcohol, vitamin deficiency, pernicious anaemia, myeloma, drugs, uraemia, carcinoma, infections (syphilis). Other causes of leg pain include peripheral vascular disease and spinal or nerve root problems.
- It is important to understand the risks of future sensory loss and diabetic foot ulceration.
- Discussion of alcohol abstinence is necessary as alcohol may also be contributing to his neuropathy.
- Discuss treatment for the neuropathy including improved glycaemic control, simple analgesia and possible use of other pain control options such as serotonin and noradrenaline reuptake inhibitors (e.g. duloxetine), anticonvulsants (e.g. pregabalin or gabapentin). Tricyclic antidepressants (e.g. amitryptyline, imipramine) were used in the past and are efficacious but patients are often troubled by side-effects. If pain persists then referral to the pain management team to consider transcutaneous electrical nerve stimulation (TENS), lignocaine or mexiletine injections or spinal stimulation.
- The discussion should focus on the management of peripheral neuropathy as requested in the GP's letter. He does, however, also mention cholesterol and blood pressure levels. Targets for BP control in a patient with uncomplicated type 2 diabetes mellitus would be to treat above 140/90 but in the presence of proteinuria targets would be lower, i.e. <130/75. Cholesterol should not be treated in isolation but here as part of cardiovascular event prevention. Previously, a risk of myocardial infarction (MI) above

30% over 10 years would have been set as a target; however, as the cost of statins falls, this target is expected to reduce to 20% or even 15%.

- Other causes of diabetic neuropathy include symmetrical sensory polyneuropathy which is characterized by loss of vibration sense and temperature sensation. Unrecognized trauma due to ill-fitting footwear is a common problem leading to ulceration. Neuropathic arthropathy (Charcot's joints) sometimes occurs in the diabetic foot.
- Other neuropathies include a painful neuropathy, such as in this case. These typically present as a burning sensation, worse at night, and the pressure from bedclothes may be extremely distressing. Good long-term glycaemic control is essential for its management but, in some patients, the neuropathy is resistant to therapy. Mononeuritis multiplex, diabetic amyotrophy (asymmetrical wasting of quadriceps) and autonomic neuropathy are other neuropathies seen in diabetes mellitus.

Comments on the case

This case tests the ability of the candidate to differentiate diabetic neuropathies (of which there is more than one) with other non-diabetic causes. The candidate must have a list of differential diagnoses thought out before starting the consultation so that the history taking can be guided appropriately. In this case, the diabetes is most likely the principal cause but alcohol may be making an important contribution.

Case 7 | Chest pain

Candidate information

You are the doctor in a cardiology clinic and you are seeing Mr Brian Daniels who has been referred to you by his GP.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Brian Daniels, aged 61 years

Thank you for seeing Mr Daniels who had a coronary angioplasty with stenting of his right coronary artery 3 years ago. Since then he has been fine and was discharged from your care 9 months ago. For the last 4 months, however, he has been suffering again from chest pain. This does not necessarily occur on exertion but can occur at rest. I have increased his nitrates but his pains persist. I wonder if his stent is not functioning adequately. Please see and advise. His medication includes: aspirin 75 mg, ISMN 60 mg bd, atenolol 50mg od and simvastatin 20 mg.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Brian Daniels is a 90 kg, 61-year-old, retired HGV driver who previously suffered from angina that would occur on exertion, especially when going up stairs. The chest pain at that time was typically dull in nature and central with radiation to the shoulder. He did not take much notice of it until one day 3 years ago when he developed a non-ST elevation inferior myocardial infarction (MI). An angiogram soon after revealed a right coronary artery occlusion that was subsequently stented. He has been pain free since then and has been leading an active, independent life until 4 months ago when the pain recurred. This pain radiates to the throat but is different from the previous angina in that it is burning and worse after meals. It occurs more at night time and not during exertion. The pain may last for up to 2 h at a time. There is occasional nausea associated with the pain and he has been woken up in the night with a feeling of choking. There are no other symptoms of note, e.g. orthopnoea, dyspnoea, cough, sputum, haemoptysis, ankle oedema, loss of weight or other abdominal symptoms. He used to smoke 10 cigarettes a day until his MI and he drinks approximately 5 pints per week. There are no other cardiovascular risk factors apart from a raised cholesterol of 6.8 which was found 3 years ago. He lives with his wife who has rheumatoid arthritis and he is the main carer for her. He stopped

driving HGV vehicles at the time of his infarct and has not worked since. His concerns are that his angina may have returned.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a history of the events 3 years ago and compare these with the present history
- how long the current chest pain has been present for
- where the chest pain occurs
- if the pain is constant or intermittent
- the nature of the pain, e.g. sharp, stabbing, burning, band-like heaviness or dull
- if it radiates anywhere, e.g. to the arm, neck, jaw or back
- if it is worse on exertion. If so, how many metres can he walk on the flat? Ask about stairs and walking up an incline. Does the pain occur at rest? Does the pain stop after stopping exertion and does it return when restarting exertion?
- any other features which may bring on the pain, e.g. hunger, eating, breathing, positional (e.g. lying flat in bed)
- other symptoms during the chest pain, e.g. dyspnoea, cough, palpitations, nausea, syncope, epigastric pain
- relevant risk factors, e.g. hypertension, diabetes mellitus, hyperlipidaemia, cerebrovascular disease
- full drug history and side-effects, e.g. headaches, impotence
- smoking and alcohol history
- family history
- the impact of the symptoms on his life and his ability to care for his wife.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- distinguish the symptoms suggestive of oesophageal reflux from those of angina
- have a plan of relevant investigations to look for oesophageal reflux
- discuss the possibility of recurrence of the angina and arrange appropriate investigations and follow-up
- address the pain symptoms and the management of this
- explore if any help can be provided to assist with the care of his wife.

3. Discussion related to the case

- This case tests the ability of the candidate to take a thorough history with assessment and analysis of the possible differential diagnoses, i.e. angina versus oesophagitis.
- A plan of management has to be outlined in the consultation and this may include FBC, U&E, lipid profile, resting ECG, chest X-ray and then further investigations.
- In order to distinguish ischaemic pain from oesophageal reflux pain, the clinician must first determine if the symptoms are likely to be due to a cardiac cause or not. If there is low probability, he/she could carry out an exercise ECG or stress myocardial perfusion scan and then, if negative, put the patient on a trial of a proton pump inhibitor. If there is a high probability of cardiac ischaemia, especially in a patient with known coronary artery disease, the clinician may want to opt for coronary angiography as first-line investigation.
- The candidate must be prepared to discuss the management of oesophageal reflux. He/she must be able to discuss further investigations such as upper gastrointestinal (GI) endoscopy, 24-h intraluminal oesophageal pH monitoring and the treatment: pharmacological versus non-pharmacological.
- Similarly, the candidate must be able to discuss the patient's management if the exercise ECG test is positive, i.e. further angiography and secondary prevention.

Comments on the case

This case highlights how important it is to obtain a thorough history of the previous events that would enable the candidate to compare the past symptoms with the present ones. The candidate should not fall into the trap of assuming that the patient has angina. It can be very disheartening for the examiners to see the candidate set off at the start of the consultation following a 'biased' history without scrutiny and without giving a thought to other possibilities. Always have an idea of differential diagnoses and ask relevant questions that would enable you to probe into each possibility.

Case 8 | Cold and painful fingers

Candidate information

You are the doctor in a general medical clinic. Mrs Brenda Normanton is referred to you by her GP.
Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mrs Brenda Normanton, aged 52**
>
> Thank you for seeing Mrs Normanton who has been complaining of cold and painful fingers for the last year. Her past medical history is unremarkable except for winter bronchitis last year. She smokes 30 cigarettes a day. She takes no regular medication. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Brenda Normanton is a 52-year-old woman who owns a fish shop in the local market. She gives a 1-year history of painful, cold fingers occurring most days. When exposed to cold temperatures, for example when handling fish stored in ice, her fingers start off pink, then turn white and then eventually to a dark blue, cyanotic colour which is associated with pain (especially on rewarming). Initially her index and middle fingers of both hands were the only ones affected but now all the other fingers but not the thumbs are involved. She has noticed her toes to be constantly cold but they do not discolour like her fingers. There is some associated numbness but when the episode is over, after rewarming, the fingers look normal with normal sensation. She has tried wearing gloves but prefers not to when at work. Her only other symptom is a chronic cough with whitish sputum in the mornings. She had acute bronchitis last winter which needed a course of antibiotics. She has no dyspnoea, chest pain, GI symptoms, arthralgia, claudication or skin rashes. She takes no medication such as β-blockers and although she was given a salbutamol inhaler during her exacerbation, she does not take this as she feels it does not help her cough and sputum. There is no past history of connective tissue disorders such as scleroderma or SLE, no blood dyscrasia or any other history of peripheral vascular disease. She smokes 30 cigarettes a day and has done so since the age of 15 and she has never considered giving up. She drinks two pints of beer in the evenings and she lives with her husband. She has three children who have all grown up and there is no relevant family history of note. Her work has revolved around her fish shop which is her

life-long passion. Her main concerns are her painful fingers and that the work precipitates this. She is also worried that she may lose her fingers.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- which fingers are affected, the colour changes and the presence of pain, numbness and burning. Whether the toes, earlobes or tip of the nose are affected and are the thumbs spared?
- frequency of the attacks
- precipitating factors, especially the cold. Are the attacks more frequent during winter?
- whether wearing gloves helps?
- whether the fingers are normal between attacks?
- any other associated symptoms, especially peripheral vascular disease, e.g. claudication or symptoms suggestive of connective tissue disorders, e.g. scleroderma, SLE, dermatomyositis, rheumatoid arthritis such as dyspnoea, dry cough, dysphagia, reflux, arthralgia, rashes
- history suggestive of cervical spine problems, neurological disease such as syringomyelia, carpal tunnel syndrome, or blood dyscrasias, e.g. cryoglobulinaemia, myeloproliferative disorders, Waldenström's macroglobulinaemia
- past history of trauma, e.g. vibrational injury, electric shocks, cold injury
- past history of chronic bronchitis and exacerbation, ischaemic heart disease
- full medication history, e.g. β-blockers and chemotherapy drugs such as bleomycin, vinblastine and cisplatin
- full smoking history
- working history and precipitating factors at work
- family history of Raynaud's disease
- concerns of the patient, particularly the worry of losing any of the fingers.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- identify the possibilities of a secondary cause for her symptoms. If not, the patient most likely has Raynaud's disease (idiopathic)
- identify the precipitating features, particularly at work
- discuss smoking cessation with the patient
- explain general measures for avoiding attacks such as wearing gloves at work (keeping fingers warm)
- reassure that in idiopathic cases, there is no long-term damage and it is rare for finger tips to be amputated for gangrene.

3. Discussion related to the case

- This case tests the ability of the candidate to differentiate secondary causes of Raynaud's phenomenon from idiopathic (Raynaud's disease).
- Common secondary causes include connective tissue disorders, peripheral vascular disease, drug induced, neurological, trauma induced and blood dyscrasias.
- If there is no suggestion of a secondary cause, there is no specific investigation; angiography of the digits is not indicated.
- Management is smoking cessation, keeping hands warm, and occasionally nifedipine 10 mg tds may be helpful.

Comments on the case

This case stresses the importance of taking a history, particularly of precipitating factors at work, possible secondary causes and a smoking history. The candidate will be expected to provide smoking cessation advice to this patient.

Case 9 | Collapse? cause

Candidate information

You are the doctor in a general medical clinic and Mr John Weston is referred to you by his GP. Mr Weston is accompanied by his wife.
Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr John Weston, aged 53**
>
> Thank you for seeing Mr Weston so soon. He was found by his wife unconsciousness in a chair after a meal last week. The wife was the only witness and tells me that he was unconscious for at least 3 minutes. He has type 2 diabetes mellitus and takes Novomix 30 insulin 34 units am and 36 units pm. He is not on any other medication. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr John Weston is a 53-year-old unemployed man who had an episode of collapse last week that was witnessed only by his wife. He is normally fit and well and leads an independent life. During this acute episode, he had sat down in the armchair after an evening meal and, according to the wife, he went grey, became unconscious and was unrousable for about 3 minutes. The meal was uneventful, i.e. no choking, etc. There were no obvious limb movements, aura, tongue biting or incontinence. After about 2 minutes he became flushed and it was another 5 minutes before he regained full consciousness. The wife did a blood sugar during the recovery phase and this was 11 mmol/L. He was alert and orientated by this time but had a slight headache. There was no limb weakness or dysphasia. Mr Weston declined to go to casualty but did agree to see the GP the next day. Presently, Mr Weston feels fine with no further episodes and no current history of chest pain, palpitations, dyspnoea, limb weakness or numbness. He has had diabetes for 12 years, initially presenting with polyuria and polydipsia. Despite initial oral medication (full tolerable doses of gliclazide and metformin), he was switched over to insulin after 1 year. He regularly visits the hospital diabetic clinic and has had one episode of laser therapy to both eyes. His last hypoglycaemic attack was 2 months ago. These normally present with a feeling of faintness and dizziness but rarely with any loss of consciousness. He had taken the correct dose of insulin before the meal and his blood sugars are normally between

6 and 10. There is no other previous history of cardiovascular or neurological disease or head trauma. Apart from the insulin, he takes no other medications or illicit drugs. He drinks 3 pints a day and occasionally has spirits at the weekend. There is no family history of seizures. He lives with his wife who is obviously concerned that Mr Weston may have had a fit. He does not drive.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- at what time of day the collapse occurred
- if he felt light-headed, nauseated or sweaty just before collapsing. Was the episode preceded by any chest pain, palpitations or sudden onset of headache?
- whether the patient was sitting down at the moment of the collapse. If so, this would point away from a vasovagal cause
- if unconscious, for how long
- if he went a particular colour, e.g. white, blue, grey
- his colour on recovery
- if there were any jerking movements of his limbs or face? If so, which limbs and which part of the face? Where did the jerking movements start and where did they spread?
- whether he bit his tongue. Was he incontinent of urine? Did he injure himself?
- whether he regained consciousness gradually. Was he confused or alert? Did he have a headache, difficulty in speaking, weakness or aches in his limbs?
- if he has had any previous similar episodes
- a detailed history of the diabetes, especially the insulin treatment, any previous hypoglycaemic episodes and their characteristics
- a detailed cardiovascular and neurological history, ascertaining the possibility of a neurological or cardiovascular cause of the collapse, e.g. dysrhythmia
- full alcohol and drug (including illicit) history
- past history of trauma
- a family history of seizures
- the concerns expressed by Mr and Mrs Weston.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- differentiate the possible causes of the collapse, e.g. cardiac dysrhythmia, seizure, alcohol-related collapse, transient ischaemic attack, hypoglycaemia, vasovagal or intracranial lesion
- explain the possible reasons for the collapse
- explain that the cause is not totally clear
- give a list of investigations needed to determine the cause
- address any concerns the couple may express.

3. Discussion related to the case

- This case tests the candidate's ability to differentiate between the above stated causes. A plan of investigations would include routine FBC, U&E, LFT, γ-glutamyl transferase (GGT), calcium, glycated haemoglobin (HbA1c), and blood glucose. This should be followed by a resting ECG, chest X-ray, 24-h ECG recording, echocardiogram, electroencephalogram (EEG) and CT scan of the head.
- The candidate should be able to discuss the strengths and weaknesses of each diagnosis. This case, on balance, suggests a cardiac cause for the collapse.
- The candidate should be able to discuss with the patient a management plan if the results of tests are normal, i.e. consideration of exercise ECG test.
- The candidate should be able to discuss further management if a cardiovascular or neurological cause is found.

Comments on the case

This case illustrates how important it is to have a witness when the patient has passed out. There may well be a partner giving a history in the exam. Be sure to obtain a thorough description of the events and to make sure you consider in detail each possible diagnosis. Do not assume this was a seizure. It is important to have an idea of the nature of any previous hypoglycaemic attacks. Be sure to have a plan of management as the couple are understandably concerned.

Case 10 | Confusion

Candidate information

You are the doctor in a care of the elderly clinic. Mr George Watkins is referred to you by his GP and is accompanied by his daughter.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr George Watkins, aged 82 years

Thank you for seeing this elderly man who has been getting progressively more confused and forgetful over the last year. He lives alone and his past medical history includes a CVA 7 years ago. His present medication is aspirin only. His daughter is concerned that this may be Alzheimer's disease. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr George Watkins is an 82-year-old retired tool mechanic who presents with increasing confusion and forgetfulness over the last year. The daughter, who lives four houses away, accompanies him. She tells you that her father has been slightly frail since his CVA 7 years ago. This affected his right arm and leg but he made a good recovery, so much so that he has managed to live alone. He manages most of his own affairs (with shopping help from the daughter) and he walks with a stick. He has had a tendency to forget certain things since the CVA but for the last year Mr Watkins has had difficulty in knowing what day or month it is and, more worryingly, has left the gas cooker on by mistake on two separate occasions. Occasionally, he gets the names of his daughters the wrong way round. There have been two occasions when the neighbour found him wandering outside the house at midnight. The confusion and forgetfulness have deteriorated rapidly during the last 6 months but he remains continent with appropriate emotions. There has been no recent history of falls, strokes, decreased consciousness or tremor. He does not take any other medication apart from aspirin (although he does forget to take this now and again) and he does not drink alcohol. He lives alone (widowed for 5 years) in a two-storey house and normally does his own cooking on a gas cooker. Until recently, the daughter only did the shopping but, during the last 3 weeks, she has had to do all the cooking and most of the household chores.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how long ago the symptoms were first noticed and how these symptoms have progressed – gradually or with sudden, worsening episodes?
- if the patient has any insight into the symptoms
- a few examples of the confusion and forgetfulness
- whether he forgets what day or time it is
- whether he forgets where he is or loses his way around his house
- whether he forgets who his daughter is
- quality of long-term and short-term memory, i.e. remote versus recent events
- problems in concentrating, personal hygiene, emotions, continence
- history of possible head trauma, seizures, vascular symptoms, e.g. diplopia, vertigo and neurological symptoms, e.g. abnormal gait, decreased consciousness, ataxia, peripheral neuropathy, tremor
- history of the stroke, recovery and any physical, psychological and social problems as a result of that
- drug history, e.g. benzodiazepines and barbiturates, and alcohol history
- psychiatric illnesses, particularly depression
- social history with risk assessment, e.g. boiling water, cooking (gas), heating
- the input from the daughter and how the situation has affected their lives, e.g. family, work, etc.
- what the daughter thinks is going on or if she has any particular concerns that she wishes to address.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- decide if the symptoms fit clinically with Alzheimer's dementia
- have a plan of investigations, i.e. dementia screen (see below)
- explain in depth the possible diagnoses and their impact
- address the concerns of the family
- offer possible referral to a specialist with a specific interest in dementia (e.g. at a memory clinic) who may be able to offer a multidisciplinary care package.

3. Discussion related to the case

- This case tests the candidate's ability to take a detailed history from a relative. The presence of dementia is diagnosed clinically but can be aided by using psychometric testing. The historian has to be someone who knows the patient well. Clinical features such as disturbance of higher cortical function including memory, comprehension, learning capacity, language, orientation, apraxia, agnosia and an inability to plan and organize must be looked for. Behavioural changes such as wandering, agitation and aggression are common as well, as is depression.
- Investigations would include FBC, U&E, LFT, glucose, calcium, vitamin B12, thyroid-stimulating hormone (TSH), thyroxine (T4), syphilis serology (if indicated), chest X-ray and CT scan of the head to confirm cerebral atrophy or exclude other intracranial pathology, e.g. tumour, multi-infarct dementia, chronic subdural haematoma.
- A formal cognitive test should be performed such as the 30-point Mini-Mental State Examination (MMSE) or the General Practitioner Assessment of Cognition Score (GPCOG).
- The candidate should be able to discuss the pathophysiology of Alzheimer's disease, the other types of dementia such as multi-infarct dementia, Parkinson's disease-related dementia, Lewy body dementia, Creutzfeldt–Jakob disease, Pick's disease (frontotemporal dementia) and others, e.g. toxic (alcohol), post-trauma, endocrine (e.g. hypothyroidism) and vitamin deficiency (e.g. vitamin B12).
- The candidate should be able to discuss the pharmacological management of Alzheimer's disease, particularly acetylcholinesterase inhibitors such as donepezil, rivastigmine and galantamine. Memantine (an NMDA receptor antagonist) is an option for moderate or severe Alzheimer's dementia in patients who are unable to take an acetylcholinesterase inhibitor.

Comments on the case

This case highlights the importance of taking a detailed history from the relative, particularly with regard to the impact of the disease on the family. As dementia is a clinical diagnosis, the importance of looking for features of Alzheimer's disease in the history cannot be overemphasized. There has to be a plan of management addressing the disease, treating any associated behavioural disturbances and caring for the family, without which the candidate will be failing both the patient and the family. The relative may ask for a prognosis and future management; if you feel this will put you out of your depth then it will be wise to refer to a specialist who has a multidisciplinary approach to managing such patients.

Case 11 | Cough

Candidate information

You are the doctor in a chest clinic. Mrs Indira Shah is referred to you by her GP. *Please read this letter and then continue with the consultation.*

Dear Doctor

Re: Mrs Indira Shah, aged 42

Thank you for seeing this lady who has recently returned from visiting relatives in India. She has been complaining of a cough for nearly 9 months. She is otherwise fit and well. She has hypertension for which I started ramipril a year ago. This was stopped soon after the cough started and she was then given amlodipine 10 mg od instead. I have tried her on a salbutamol inhaler for the last 2 months but her cough persists. A recent chest X-ray has been reported as showing normal lung fields. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Shah is a 42-year-old lady of Indian origin who has lived in the UK for 25 years. She returned back from a 2-week holiday in India 4 weeks ago. Until 9 months ago she was fit and well, leading an active, independent life as a shop assistant. However, she developed a cough which is worse at night and is increasing in severity, so much so that now she has occasional episodes of urinary incontinence and poor sleep quality. The cough persisted during her trip to India. The cough is associated with occasional mucoid phlegm (never purulent) and there is no evidence of blood. There is no wheeze or breathlessness but she does feel tired if she walks up an incline. Her only other symptom is occasional heartburn, particularly after a large meal, which is relieved by Gaviscon. There is no loss of weight or appetite, ankle swelling, chest pain or fever. She is a known hypertensive and was started on ramipril 1 year ago. The cough started 3 months after this but, despite discontinuing the ramipril, the cough has persisted. There is no contact or family history of tuberculosis. There is no other past medical history of note such as allergic rhinitis or any history suggestive of an inhaled foreign body. There are no pets at home and she has never smoked. Her husband does not smoke either. There are no obvious allergic triggers at home or work. Her medication now includes amlodipine 10 mg od and a salbutamol inhaler which has not been of any help though her inhaler technique is good. She lives with her two sons and husband who owns a shop. She is particularly concerned with the poor sleep quality and the incontinence and together these are causing family strife.

Examiner information

1. Data gathering in the interview

A good candidate would be able to:

- obtain a detailed history of the cough with particular reference to the start of treatment with an ACE inhibitor
- confirm when the cough is worse, e.g. at night, morning
- confirm any associated sputum, haemoptysis, dyspnoea, orthopnoea, wheeze and fever and pay particular attention to any history of heartburn
- look for any other possible cause of cough such as allergic rhinitis/sinusitis (postnasal drip), asthma, tuberculosis (contact history in the UK and India?)
- elicit a smoking and occupational history
- elicit any allergic history, especially common household allergens, e.g. cats, dogs, pollen, house dust mite, mould
- elicit a detailed drug history including ACE inhibitors and any other drugs which may cause a pneumonitis, e.g. amiodarone
- determine the impact of the cough on the patient and the family, with particular attention paid to the poor sleep pattern and urinary incontinence.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- decide a possible cause for this cough
- explain the possible differential diagnoses of a cough with a normal chest X-ray and to reassure that there is no evidence of lung cancer, pneumonia or tuberculosis on the X-ray
- sympathize with the patient with regard to the impact of the symptoms on her and the family
- have a plan of investigations
- stress that there will be no immediate curative treatment for the cough until the results of all the investigations are available.

3. Discussion related to the case

- This case is a common dilemma presenting to respiratory physicians and it tests the ability of the candidate to structure the history towards finding an aetiological cause for the cough. This patient probably has gastro-oesophageal reflux to explain the night-time cough, particularly with a history of heartburn. Other possibilities include (a) asthma which may not necessarily manifest with wheeze, (b) postnasal drip as a result of allergic rhinitis or sinusitis, (c) ACE inhibitor induced – it is still possible for symptoms to persist beyond 9 months after discontinuation of treatment, and (d) chronic bronchitis which again is doubtful as she has never smoked and there is no obvious strong occupational history such as working with coal fires. Tuberculosis must always be considered as a cause of a chronic cough but there are no typical symptoms suggestive of this and reassuringly the chest X-ray was normal. An inhaled foreign body (e.g. a pea) should also be considered but the chest X-ray in such a case would be expected to show some radiological changes such as collapse, consolidation or effusion.
- Investigations should always start with a chest X-ray to rule out other obvious causes of a cough (associated with radiological abnormalities) such as pneumonia, lung neoplasm, sarcoidosis and heart failure. Simple investigations such as serial peak flow monitoring should be the next line of investigation, looking for any diurnal variation which would be suggestive of asthma. If sinusitis is strongly suspected then a CT scan of the sinuses may be useful. Other invasive investigations such as 24-h intraluminal oesophageal pH monitoring or bronchoscopy may be reserved until trials of corticosteroid inhalers for asthma, proton pump inhibition for oesophageal reflux or nasal corticosteroid sprays for allergic rhinitis have failed to achieve any symptomatic improvement.

Comments on the case

This case tests the ability of the candidate to think about the possible differential diagnoses before commencing the consultation, otherwise important aspects of the history will be missed. Again, it is a typical case where investigations may be normal and a clinical diagnosis is made purely on the history. It is also a typical case of where no obvious immediate cure may be available and this has to be communicated to the patient; she may be expecting an answer to all her symptoms that day. Chronic cough is a symptom that can have an immense impact on the rest of the family and hence the candidate must show sympathy and have an understanding rapport throughout the consultation.

Case 12 | Diabetic feet

Candidate information

You are the medical doctor in the diabetes clinic. Mr Gordon Wright is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Gordon Wright, aged 67

Thank you for seeing this man urgently in clinic. He has a long history of diabetes and, when seen by the local chiropodist last week, a small ulcer over his left fourth toe was seen. I saw him in my surgery today and I found that the toe had turned black. Mr Wright has a long history of a sensory neuropathy and I could not detect any pulses in the left foot.

Current medication: Novomix 30 40 units am and 26 units pm, simvastatin 10 mg od, imdur 60 mg od, aspirin 150 mg od, amlodipine 5 mg od, ramipril 5 mg od.

Please advise on diagnosis and management.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Gordon Wright is a 67-year-old retired salesman. He has had diabetes mellitus for 12 years and has been on insulin for 4 years. Last week, after wearing some new shoes, he noticed an ulcer over the fourth toe on his left foot. He booked an emergency appointment with the chiropodist as he had been advised to do so if this ever happened. The ulcer was dressed and the chiropodist said that he did not need antibiotics as it was very superficial. Today he went back to have it redressed. He had been worried, even before the dressing came off, because the toe had been throbbing all night and he was horrified to see that it had turned black. He was seen straight away by the GP, who could not detect any pulses in the left foot. He has had a bilateral sensory neuropathy (characterized by numbness) for 3 years and laser therapy for retinopathy 2 years ago. He was converted to insulin 4 years ago although this was delayed as long as possible due to a phobia of self-injection. Previous history includes an MI in 1992 when he presented with central, crushing chest pain. He remembers being given streptokinase. He made a good recovery but does get occasional angina when walking uphill against a cold wind. He does not suffer from calf claudication.

He also has hypertension for which he takes amlodipine and lisinopril. Otherwise, he is reasonably well, ambulant and self-caring. He smokes five cigarettes a day and is trying hard to give up. He does not drink and lives with his wife who needs help with washing and dressing as she has severe rheumatoid arthritis. He is obviously concerned about the state of his toe, with fears of an imminent amputation, and any admission will mean arranging care for his wife. He also believes that delaying the conversion to insulin may have caused this.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a detailed history of the events surrounding the development of the gangrenous toe
- a detailed history of the diabetes, especially any past history of microvascular (retinopathy, neuropathy) and macrovascular complications (previous MI, and absent left foot pulses)
- history of the MI and any current angina. Any history of peripheral vascular disease
- other past medical history and cardiovascular risk factors, e.g. hypertension, hyperlipidaemia, family history of coronary artery disease
- drug history, including insulin and diabetic diet
- smoking history
- social circumstances, especially care needed for the wife
- concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- speculate on the contribution of the micro- and macrovascular disease to the ischaemic toe and to his neuropathy
- explain to the patient that he will need an urgent assessment by the vascular surgeons and that management will be jointly shared by the diabetologists and the surgeons
- explain that vascular studies will determine whether he will need surgery to his arteries to improve the blood supply or just local treatment for his toe
- consider whether this patient needs admission or close follow-up in a diabetes foot clinic. Enquire whether arrangements need to be made for his wife's care
- explain the importance of good blood pressure and glycaemic control
- advise on stopping smoking
- explain that diabetic complications are usually due to a long period of poor control and are made worse by smoking, but at least reassure him that he has been right in seeking urgent advice for the toe.

3. Discussion related to the case

- This gentleman has both macro- and microvascular complications of diabetes. He has type 2 diabetes mellitus which is now treated with insulin, and from the history we note that contributory risk factors have been poor glycaemic control and smoking.
- Foot ulcers occur in as many as 25% of individuals with diabetes during their lifetime, and a significant subset of those individuals will at some time undergo amputation (14–24% risk with that ulcer or subsequent ulceration). Diabetes mellitus is the most common cause of non-traumatic lower limb amputations in the western world. Risk factors for foot ulcers or amputation include male sex, diabetes >10 years duration, peripheral neuropathy, abnormal structure of foot (bony abnormalities, callus, thickened nails), peripheral vascular disease, smoking, and a history of previous ulcer or amputation. Bad glycaemic control is also a risk factor – each 2% increase in the HbA1c increases the risk of a lower extremity ulcer by 1.6 times and the risk of lower extremity amputation by 1.5 times.
- This gentleman was at risk of foot ulceration because of established neuropathy and additionally he probably has macrovascular disease affecting the legs in view of the missing foot pulses, although he does not have a history of intermittent claudication. He will also have a contribution from microvascular disease and superimposed infection is a distinct possibility. The need for inpatient or outpatient treatment will depend on the extent of the ulceration/gangrene and the findings of the vascular surgeons. He may get

away without admission as the vascular surgeons can arrange urgent outpatient angiography, and he can be managed in a multidisciplinary foot clinic with an admission if there is a need for angioplasty or bypass. If this arrangement is not possible, and with the high likelihood of infection and the need for intravenous antibiotic treatment, the patient will need to be admitted with arrangements made for the wife. Subcutaneous low molecular weight heparin and a pressure-relieving mattress should be included in the management plan. Activity should be restricted and temporary footwear provided. Intensive control of blood glucose will be important. The toe may need amputation but if the arterial supply can be improved, it may dry up and autoamputate.

- Distinguishing ischaemia and neuropathy is a basic assessment need for the patient. Both may coexist. Ischaemia is characterized by rest pain, claudication, cold feet, poor pulses with painful ulceration, especially heels, ankles and toes; and sensory neuropathy is usually painless with warm feet and bounding pulses.
- Patient education should emphasize: (1) careful selection of footwear, (2) daily inspection of the feet to detect early signs of poor-fitting footwear or minor trauma, (3) daily foot hygiene to keep the skin clean and moist, (4) avoidance of self-treatment of foot abnormalities and high-risk behaviour (e.g. walking barefoot) and (5) prompt consultation with a health-care provider if an abnormality arises.
- Discussion with the examiners may include the incidence of vascular disease in patients with diabetes, the contributing causes for diabetic foot disease and the importance of a multidisciplinary care team in the management of the diabetic foot, including the early identification and treatment of coexisting osteomyelitis.

Comments on the case

This case tests the candidate's ability to take a diabetic foot history. The patient, like many other such patients, has several complications as a result of the diabetes, and hence it is essential for the candidate to really explore deeply into these problems in order to be able to manage the patient optimally.

Case 13 | Difficulty in walking

Candidate information

You are the doctor in a neurology clinic. Mrs Sheila Harrison is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Sheila Harrison, aged 63

Thank you for seeing Mrs Harrison so quickly. She has been complaining of a gradual progression of difficulty in walking for 5 months with some numbness in her feet. She has chest pain and a long-standing cough from her chronic bronchitis. She smokes 40 cigarettes a day. She uses a salbutamol inhaler and needs paracetamol for the pain. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Sheila Harrison is a 63-year-old retired hospital domestic who complains of a gradual, progressive weakness affecting both legs and leading to difficulty in walking over the last 5 months. Her symptoms have deteriorated significantly in the last 4 weeks. At the onset, 5 months ago, she remembers tripping over whilst shopping one day. During the last 6 weeks she has found walking up stairs much harder and indeed has had two falls at home last week. She has global weakness in both legs and finds getting out of a chair difficult without using her arms. She has noticed a progressive loss of sensation initially in the feet and now up to around the middle of her chest. The symptoms are constant throughout the day and she has no headache, diplopia, muscle wasting or tremor. She has recently noticed difficulty in micturating and occasional urinary incontinence (bowel control is presently intact). Her general systemic symptoms include constant dull central chest pain with a band-like radiation bilaterally, which is worse on sneezing, coughing and straining. The pain is worsening and now keeps her awake at night. She has had a productive cough for more than 4 years and this is due to her chronic bronchitis. She smokes 40 cigarettes a day and has done so for over 40 years. There is no haemoptysis, gastrointestinal or gynaecological symptoms, loss of weight or loss of appetite. There is no past history of diabetes mellitus, spinal injury/trauma, intervertebral disc disease, sciatica, arthritis, neuromuscular disorder, e.g. myasthenia, metabolic history, e.g. hyperthyroidism,

Cushing's syndrome, or electrolyte disturbance. She takes a salbutamol inhaler for her bronchitis and regular paracetamol for her pain. She has had a lot of breakthrough pain in the chest recently. There is no previous history of taking corticosteroids or diuretics and she does not drink alcohol. She has no family history of neuromuscular disorders. She is widowed and lives alone and is naturally worried about her progressive symptoms. She has found that she is relying on her neighbour to do the shopping and now does not go out of the house. She lives in a big four-bedroom house with stairs and is finding the general maintenance of the house difficult.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how long the symptoms have persisted and whether they are worsening
- if there is weakness in both legs and where (distal versus proximal versus global)
- if she is having any falls or trips
- if she can get out of a chair without using her arms. Can she walk up stairs?
- if the symptoms are worse towards the end of the day (myasthenia gravis)
- if there are any other neurological symptoms, e.g. headache, diplopia, muscle wasting, sphincter problems, tremor of hands, backache and paraesthesia (if so, to what level?)
- other respiratory, abdominal and gynaecological symptoms that could be suggestive of a neoplasm (primary)
- the band-like chest pain worse on coughing, sneezing and straining that may suggest a level of spinal cord compression. Is there adequate pain relief?
- a history of diabetes mellitus, spinal injury/trauma, disc disease, sciatica, arthritis, neuromuscular disorder, e.g. myasthenia gravis, metabolic history, e.g. hyperthyroidism, Cushing's syndrome or electrolyte disturbance
- drug history, especially corticosteroids (proximal myopathy), diuretics
- alcohol and smoking history
- the impact of her symptoms on activities of daily living
- the concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assemble a differential diagnosis list
- discuss these possibilities with the patient
- discuss the investigations to be arranged
- consider admission as she lives alone and her social circumstances are deteriorating
- address the concerns of the patient, especially regarding cancer and admitting that you are not sure if the diagnosis is definitely cancer but that this has to be a possibility.

3. Discussion related to the case

- This case illustrates how spinal cord compression in the thoracic region may present. Causes of neoplastic spinal cord compression include extradural (e.g. metastatic spread particularly from lung and breast – although onset is usually more acute), extramedullary (e.g. meningioma, neurofibroma and ependydoma) and intramedullary (e.g. glioma, which usually presents over many years). This case illustrates that radicular pain at the site of the compression (thoracic band-like pain worse on coughing, straining and sneezing), spastic paraparesis and sensory loss up to the level of the compression are typical in a case such as an extradural meningioma. Other possibilities include vertebral disc protrusion especially in the cervical spine, inflammatory causes such as tuberculous and epidural abscess and, rarely, epidural haemorrhage and haematoma.

- The candidate must have a plan of investigations to relay to the patient. Time wasted cannot be tolerated. A routine chest X-ray may detect an unsuspected lung cancer, and plain spinal X-ray films may show destruction of a vertebral body but the investigation of choice is an *urgent* MRI scan.

Comments on the case

This is a case where the symptoms are classic and the candidate really should have an idea of exactly what he/she is dealing with. The patient is obviously anxious that this may be cancer and although the candidate cannot say whether it is or not, he/she must be seen to share the patient's worry and urgency.

Case 14 | Dizziness and feeling faint

Candidate information

You are the doctor in a care of the elderly clinic. Mrs Edna Richards is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Edna Richards, aged 83

Thank you for seeing Mrs Richards who has complained of several episodes of feeling faint and dizzy over the last few months. On examination, I heard a carotid bruit on the left and I wonder if this may be a reason for her symptoms. She has a past history of hypertension and takes bendroflumethiazide 2.5 mg od. She has never smoked. Her BP is 155/88 mmHg. I am concerned as she lives alone and has no family. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Edna Richards is an 83-year-old retired secondary school headmistress who has had several episodes of dizziness and of feeling faint with transient disturbance of consciousness during the last 6 months. These are occurring about once a fortnight, and on the last three occasions she has fallen and had difficulty in getting up again. The symptoms come on suddenly and unexpectedly, usually when she is at home. Once, it occurred when she was hanging out the washing. The dizziness lasts for about 1–2 min. Normally she has to sit down to rest and by 10 min she is back to her normal self. She cannot remember much else about the symptoms. There are no obvious sensations of 'spinning of her head', palpitations, chest pain, dyspnoea, tinnitus, vomiting, headache, weakness or numbness in the arms or legs or urinary incontinence. The symptoms do not occur during micturition nor if she gets up quickly from the chair. Her past medical history includes hypertension for the last 12 years for which she takes bendroflumethiazide 2.5 mg and the GP is reasonably happy with the blood pressure. She is otherwise fit and well, living on her own (widowed for 3 years) and doing her own shopping and cooking. She has no other family. She has never smoked and does not drink alcohol.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a full description of the symptoms, especially whether the symptoms are a sensation of imbalance or faintness, or does she mean vertigo, e.g. sensation of revolving in space or the surroundings revolving around her?
- how often the symptoms occur
- how long each episode lasts for
- what triggers the dizzy spells, e.g. stooping, standing up quickly from a sitting position, turning her head sharply, etc.
- whether the dizzy spells abate spontaneously, e.g. by lying down, or do they lead to unconsciousness?
- if there is any associated nausea, vomiting, nystagmus, tinnitus (vertigo)
- if there are any associated palpitations or syncope (cardiac dysrhythmias)
- if there are any associated diplopia, paresis, confusion, dysphasia or numbness (transient ischaemic attacks)
- details regarding the falls, if she has difficulty in getting up or whether she has had any injuries
- a drug history, especially antihypertensives, diuretics
- any past medical history of diabetes mellitus, ischaemic heart disease, hyperlipidaemia, hypertension
- any obvious blood loss leading to anaemia
- a social history, particularly about the house and especially an accident risk assessment, e.g. steepness of stairs, etc.
- impact of the symptoms on the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- understand the exact circumstances surrounding the case and that there may not be a witness available to give more details of the episodes
- explain the possible causes for her symptoms
- have a plan of investigations
- explain in simple terms that the GP has found a carotid bruit and that this may or may not be related to the symptoms
- explain what a carotid ultrasound involves, stressing that the test is non-invasive.

3. Discussion related to the case

- This case tests the candidate's ability to take a detailed history and to differentiate the possible causes such as carotid artery stenosis, carotid sinus hypersensitivity, orthostatic hypotension, cardiac dysrhythmias, transient ischaemic attack, drug induced and anaemia.
- This scenario suggests carotid sinus hypersensitivity due to excessive sensitivity of the carotid sinus commonly found in the elderly. She describes symptoms when she moves her neck, especially when hanging up the washing.
- Investigations should include routine tests looking for anaemia and disturbance of the urea and electrolytes as a result of the bendroflumethiazide, resting ECG, 24-h ECG tape, sitting and standing blood pressure and carotid Doppler ultrasound. Tilt table assessment may be useful in cases of impaired autonomic reflexes as a cause of postural hypotension, particularly in the elderly.
- As she lives alone, it would be prudent to admit her for investigations and for an occupational therapy assessment of her safety at home; the GP has expressed concern as well.

Comments on the case

This is a typical case where the candidate has a patient who (a) may not remember too many details of the symptoms, (b) may use terms such as 'dizziness' to mean something completely different to what the candidate understands. Hence it is vitally important to ask exactly what the patient means by 'dizziness' or feeling 'faint', etc. Do not assume that you and the patient are talking about the same thing! It is important to read the GP's letter carefully to make a judgement about his concerns. Do not dismiss these concerns; the GP knows the patient better than you do so you must respect his anxieties.

Case 15 | Double vision

Candidate information

You are the doctor in a general medical clinic. Mr Alfred Lee is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Alfred Lee, aged 50**
>
> Thank you for seeing Mr Lee who gives a 12-month history of diplopia. He felt this was due to fatigue when working late but now he finds it difficult to keep his eyes open in the evenings. Routine blood tests including FBC, U/E, LFT, calcium and a chest X-ray are all normal. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Lee is a 50-year-old lawyer who has had diplopia for the last 12 months. The diplopia is worse towards the end of the day. He has also recently noticed, when he is at his desk, that when looking up at someone for a prolonged time, his eyelids close. Initially he put all this down to general fatigue which he has had over the last year. The fatigue has become worse over the last 3 months and he finds that walking home from the train station, which includes climbing two flights of steps, in the evenings is particularly arduous; walking to the station in the morning is not such a problem. He has also noticed that he has some weakness in his limbs. When his son asked him to help assemble a set of shelves, he could not hold these up for more than a minute. He has not had any problems with chewing, swallowing, speech production or breathing. He does not have any other symptoms of cardiovascular or gastrointestinal disease, hyperthyroidism or neurological symptoms such as headache, loss of consciousness or ataxia. There have been no obvious precipitants causing an acute deterioration of his symptoms. He has always been well with no significant past medical history. There is no past history of note or any family history of autoimmune disorders such as pernicious anaemia, rheumatoid disease, hyperthyroidism or SLE. He has never smoked and drinks wine occasionally at home. He lives with his wife and his main concerns are about the effect of these symptoms on his work. He is particularly worried that this may all be due to motor neurone disease.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the details of the diplopia, when and how first noticed (usually early sign of myasthenia), which direction and which part of the day he can read print (visual acuity). Whether there is ptosis and if so is this complete and which eye(s) is/are involved. Is the ptosis worse after looking upwards for a prolonged time?
- history of tiredness, weakness and fatigability – whether it is worse after repetitive usage of muscle groups and improves with rest or sleep. Which limbs and which muscle groups, e.g. proximal, distal or both muscle groups? Seek examples of when he has had particular problems with limb weakness
- history of weakness of other muscle groups, e.g. facial (myasthenic 'snarl' when attempting to smile), bulbar involvement (difficulty in chewing and swallowing, dysarthria at the end of sentences), respiratory muscle weakness
- other neurological symptoms suggestive of an intracranial lesion, or other systemic symptoms suggestive of a neoplasm (e.g. Lambert–Eaton syndrome secondary to small cell lung cancer)
- any past history of autoimmune disorders (associated with myasthenia gravis), e.g. hyperthyroidism, thyroiditis, SLE, rheumatoid disease and pernicious anaemia
- a drug history, e.g. D-penicillamine for rheumatoid arthritis, aminoglycosides in large doses, procainamide
- smoking and alcohol history
- impact of symptoms on family and work
- concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- explain the possible differential diagnoses to the patient
- have a list of investigations and explain this to the patient
- concede that it is a disabling disorder and will need treatment
- outline the main principles of management
- address the concerns of the patient and reassure him that this is not motor neurone disease.

3. Discussion related to the case

- This scenario illustrates myasthenia gravis (IgG antibodies to acetylcholine receptor protein), particularly as the patient describes fatigability when looking up at someone or holding up shelves. He also describes extraocular muscle weakness and diplopia as a result.
- Investigations to confirm diagnosis are important, e.g. anti-acetylcholine receptor (AChR) radioimmunoassay: 90% positive in generalized myasthenia gravis, 50% in ocular myasthenia and 25% in those in remission. A negative result does not exclude myasthenia and patients with pure ocular myasthenia are more likely to be seronegative.
- In patients with negative anti-AChR antibodies, antibodies to muscle-specific receptor tyrosine kinase (MuSK) can be tested. This is positive in 40–50% of patients with generalized myasthenia who are AChR antibody negative.
- Edrophonium chloride (Tensilon) 2 mg test dose, then 8 mg intravenous (IV) (an acetylcholinesterase inhibitor); highly probable diagnosis if unequivocally positive (an immediate improvement in weakness). Repetitive nerve stimulation shows a decrement of muscle-evoked muscle action potential >15% at 3 Hz.
- In patients with ptosis, the ice pack test has a sensitivity of around 80% and is a simple bedside test that can be done. It is based on the principle that neuromuscular transmission improves at lower temperatures and is performed by placing an ice pack on a closed eyelid for 2 min. An improvement of the ptosis constitutes a positive result.
- The candidate will be expected to discuss other relevant diagnoses. Other conditions that cause weakness of the cranial and/or somatic musculature include drug-induced myasthenia (e.g. anaesthetic agent, aminoglycosides, penicillamine, phenytoin), Lambert–Eaton myasthenic syndrome (LEMS), myotonic dystrophy, hyperthyroidism, botulism, intracranial mass lesions (if suspected, e.g. sphenoid ridge meningioma, must have MRI), non-organic cause of apathy and tiredness, and progressive external ophthalmoplegia with mitochondrial disorders.
- The candidate would also be expected to discuss the importance of a thymoma in the general outcome, the management of myasthenia gravis (oral pyridostigmine, steroids/other immunosuppressive drugs, plasmapheresis/IV immunoglobulin) and of myasthenic crises.

Comments on the case

In this case the candidate must ask the patient for examples of his weakness and fatigue to get a feel of the history and to make sure that this is not motor neurone disease, which is the patient's foremost worry.

Case 16 | Dysphagia

Candidate information

You are the doctor in a gastroenterology clinic. Mr Fred Williams is referred to you by his GP for an urgent consultation.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Fred Williams, aged 63

Thank you for seeing Mr Williams who complains of difficulty in swallowing for the last 12 weeks. As a consequence he has lost 2 kg in weight. He is naturally concerned about the possibility of a cancer. In the past he has had arthritis of the right knee for which he takes paracetamol. He has had heartburn for many years for which he takes ranitidine.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Fred Williams is a 63-year-old former accountant for the city council. He has had difficulty in swallowing for the last 12 weeks. This has gradually progressed from an inability to eat large meals to having to cut up meat into small pieces, and to now finding that these meat pieces intermittently stick in the lower part of the chest and are associated with some pain. He has no pain between meals. He also suffers from heartburn which he has had for many years. He has had two recent episodes of waking up in the middle of the night choking and with a feeling of acid in his mouth. There has been a 2 kg loss of weight but no other symptoms of vomiting, haematemesis, loss of appetite, dyspnoea or hoarseness of the voice. He has no neurological symptoms or history of having swallowed any foreign bodies. He has been taking ranitidine which has provided some relief until now. There is no history of taking NSAIDs although he does take paracetamol for an arthritic knee. He has never smoked and rarely takes alcohol. He lives with his wife. He is concerned he may have cancer.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the duration of the symptoms, whether they are getting progressively worse (e.g. cancer) or are intermittent (e.g. motility disorder)
- if there is chest pain between meals or any pain on swallowing
- whether solid food (obstructive) and/or liquids (motility) are equally difficult to swallow (achalasia)
- if the patient can point to where food seems to stick
- any high dysphagia (compression web, pharyngeal pouch, thyroid swelling)
- if swallowing is easier in a different posture
- any history of associated vomiting, haematemesis, regurgitation, heartburn, weight loss, loss of appetite, hoarseness, dyspnoea, cough, choking or spluttering, especially when lying flat (typical in achalasia)
- the past history of reflux oesophagitis with any precipitating and relieving factors
- any neurological symptoms (bulbar palsy)
- any history of a foreign body ingestion
- drug history, e.g. NSAIDs, potassium (which can cause oesophagitis) or aspirin
- any history of scleroderma
- the impact of the symptoms and the concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- develop a list of possible differential diagnoses
- explain the possible causes for the dysphagia and the impossibility of totally excluding a cancer without an endoscopy
- describe what an endoscopy entails
- address any concerns with regard to the procedure and diagnosis
- arrange follow-up to discuss these results.

3. Discussion related to the case

- This case tests the ability of the candidate to develop a list of differential diagnoses: benign oesophageal stricture, reflux oesophagitis, oesophageal tumour (e.g. carcinoma, benign such as leiomyoma) or motility disorder (e.g. achalasia, spasm, scleroderma). Other conditions which need to be considered are drug-induced oesophagitis, especially due to NSAIDs, infective oesophagitis (e.g. candida, herpes, cytomegalovirus), neuromuscular disorders (e.g. bulbar palsy), pharyngeal disorder (e.g. pouch or web), globus hystericus (high dysphagia in the throat that is related to anxiety), foreign body obstruction.
- The candidate should give a list of investigations such as routine blood tests, especially looking for malnutrition and anaemia, chest X-ray looking for signs of pulmonary aspiration, barium swallow and an upper GI endoscopy.
- For discussion, the candidate should know what an upper GI endoscopy entails with knowledge of the diagnostic and therapeutic uses of this test, knowledge of motility disorders and their presentation and investigations, diagnosing tumours and their management. The candidate must be able to distinguish certain features of the history that may suggest a neoplasm, for example, unrelenting progressive worsening of symptoms, continuous pain, loss of weight and appetite and aspiration.

Comments on the case

This is a case where the history of dysphagia must be taken carefully, looking especially for symptoms suggestive of cancer. It cannot be certain if this is a neoplasm or not just from the history and, as the concerns will not be alleviated until the results of the endoscopy are known, the candidate must be seen to show a sense of urgency and concern.

Case 17 | Epigastric pain and nausea

Candidate information

You are the doctor in a gastroenterology clinic. Mrs Sarah Thompson is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Sarah Thompson, aged 39

Thank you for seeing this lady who has complained of epigastric abdominal pain with nausea on and off for 4 months. I cannot find any abnormalities on abdominal examination. She was prescribed omeprazole for 4 weeks with only intermittent relief of symptoms. Her full blood count, urea and electrolytes and liver function tests were all normal. Her past medical history is unremarkable except that she has had episodes of allergic rhinitis. I wonder if you would consider whether an endoscopy is warranted.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Sarah Thompson is a 39-year-old domestic cleaner weighing 82 kg who gives a 4-month history of intermittent epigastric pain and nausea. The symptoms have been progressively increasing in frequency and at present are occurring 4–5 times each week. Each episode is colicky and sharp in nature, lasting 30–60 min and with no obvious radiation to the shoulder or the back. Alcohol may precipitate the pain. The pain is not worse with particular movements or on deep inspiration and is not relieved by food, belching or defaecation. She had some intermittent relief with antacids and omeprazole but admits to poor compliance. The nausea is related to the pain. She has had 2 days off work in the last 4 months. There is no history of heartburn, vomiting, bloating, haematemesis, change in bowel habit, rectal bleeding, jaundice and no loss of weight or appetite. In the past she has had seasonal allergic rhinitis for which she takes a Beconase nasal spray. She also suffers from headaches for which she takes paracetamol. She does not take any non-steroidal anti-inflammatory therapy. She smokes 15 cigarettes a day and occasionally drinks two glasses of wine during the evening. She lives with her husband and has two children. Her mother died from colonic carcinoma and she is worried that she may have a neoplasm as a cause of her symptoms.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a detailed history of her symptoms, particularly the site of the pain, the timing, character, constant or intermittent, radiation (to the back or the shoulder), precipitating factors (e.g. movement, food, inspiration), relieving factors (e.g. food, belching, antacids, defaecation), timing of the nausea
- any other gastrointestinal symptoms such as heartburn, dysphagia, vomiting, haematemesis, change in bowel habit, rectal bleeding, jaundice, pale stools, dark urine, loss of weight and appetite, bloating
- a complete drug history, especially non-steroidal anti-inflammatory drugs, codeine phosphate, coproxamol, aspirin
- her response to omeprazole and possible reasons for the non-compliance – this may be important if further treatment regimens are recommended
- a detailed alcohol and smoking history
- the impact of this pain on her life, e.g. time off work
- her concerns, especially the family history of colon cancer.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- explain the possible diagnoses
- explain how these may be investigated
- aim to address the worsening nature of the symptoms
- determine any possible precipitating factors, especially NSAID usage
- discuss the possibility of an endoscopy with an explanation of the procedure
- discuss her concerns about cancer
- reassure the patient that cancer is unlikely without any 'alarm symptoms', especially dysphagia, weight loss and GI bleeding.

3. Discussion related to the case

- This case is very common in clinical practice and tests the ability of the candidate to differentiate the diagnosis of non-specific dyspepsia from peptic ulcer disease, gallstones and GI neoplasia. The candidate must be able to elicit any possible 'alarm symptoms' (e.g. GI bleeding, unexplained weight loss, progressive dysphagia/odynophagia, recurrent vomiting, anaemia).
- The candidate should have a plan for investigations. Generally, in young people (<55 years) with dyspepsia and an absence of 'alarm symptoms', GI malignancy is highly unlikely. It would be worthwhile to assess the patient's *Helicobacter pylori* status and treat if positive without the need to do invasive testing.
- Non-invasive tests for *H. pylori* include urease breath test and measuring IgG antibodies in serum. If these are positive then eradication therapy may be instituted. If negative, then a trial of proton pump inhibition may be tried, ensuring that the patient takes the drug regularly.
- The candidate should be able to discuss the pros and cons of an upper GI endoscopy at this stage, as this task has been requested by the GP. Further investigation such as an endoscopy should ideally be reserved for when 'alarm symptoms' develop or when symptoms persist despite a trial of therapy. It is important to review the patient again in clinic to discuss further the need for an endoscopy.
- The candidate should be able to discuss the epidemiology of *H. pylori*, its mechanism of action, clinical features and diagnostic methods (non-invasive versus invasive). The candidate may be asked to discuss the pros and cons of eradication with or without peptic ulcer disease and their side-effects.

Comments on the case

This is a common case in clinic and stresses the importance of taking a detailed history, especially eliciting the symptoms suggestive of neoplasia. This case tests the candidate's ability to explore any concerns the patient may have. The possibility of cancer is always a worry for many of these patients – the referral to a specialist is itself anxiety provoking and so exploration of these worries followed by reassurance is very useful. It is important to address the issue of an endoscopy as requested by the GP.

Case 18 | Facial swelling

Candidate information

You are the doctor in a general medical clinic. Mrs Lorna Smith is referred to you by her GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Lorna Smith, aged 31**
>
> Thank you for seeing Mrs Smith who has complained of two episodes of itchy facial swelling in the last 6 weeks. I treated her with chlorpheniramine (Piriton) and prednisolone on both occasions but I am unable to identify the cause. She has no relevant past medical history. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Lorna Smith is a 31-year-old housewife who, over the last 6 weeks, has had two similar episodes, 2 weeks apart, of soft tissue swelling of her face. She is presently asymptomatic. Both episodes developed rapidly over 20 min, with swelling around the eyes, lips and tongue. She had some discrete cutaneous swellings (weals) on both hands that were intensely itchy and erythematous. Her tongue felt numb but there was no laryngeal oedema (no stridor or dyspnoea). On the second occasion her eyes became fully closed, causing her distress. On both occasions, the GP gave oral chlorpheniramine (Piriton) 4 mg 4-hourly and prednisolone (30 mg od) to treat the urticaria. The symptoms improved within 6 h but were not fully resolved for 72 h. Once recovered, there was no lasting rash. There has been no obvious precipitant such as extreme temperatures, local pressure, inhalatory allergens (pollen, moulds, animal dander) or insect bites and she is normally tolerant of foods such as fresh fruits, shellfish, fish, milk products, chocolate, peanuts and medications such as NSAIDs, aspirin or penicillin. There has been no recent unusual contact sensitivity to metal jewellery or dog/cat hair and saliva. She has no other symptoms such as GI symptoms (diarrhoea), respiratory symptoms of dyspnoea, cough or wheeze or other systemic symptoms, e.g. fever, arthralgia, myalgia. She has no other previous history of allergies, asthma, allergic rhinitis, eczema or of recent viral infections. There is no family history of allergy or angio-oedema. She does not take any routine medication and does not smoke or drink alcohol except a glass of beer now and again. She lives with her husband and three young children who are all well. The

family is concerned about these swellings and wishes to know what is causing it and how it can be prevented.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the exact description of the weals on the hands and the facial oedema, and the parts that are affected
- how quickly the urticaria appeared and for how long it persisted
- the response of the symptoms to antihistamines and prednisolone
- any associated symptoms, especially those suggestive of laryngeal oedema (stridor, dyspnoea) or gastrointestinal or systemic disorders, e.g. fever, arthralgia, myalgia
- any obvious precipitating cause, e.g. trauma, local pressure, emotional stress, inhalatory allergen (pollen, animal dander, mould), insect bites, extreme cold or heat, solar rays, allergic contact substances such as metallic jewellery or dog/cat hair and saliva
- any previous food allergies, e.g. fruit (strawberries), food colouring, shellfish, chocolate, peanuts
- any past history of atopy, eczema, allergic rhinitis, asthma or recent viral illnesses, SLE, thyrotoxicosis or lymphoma which may present with urticaria
- any family history of angio-oedema
- a full drug history, especially NSAIDs, aspirin, ACE inhibitors, opiates and penicillins
- alcohol and smoking history
- social history
- occupational history
- the concerns of the family.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assess fully the past symptoms as she describes them now that she is asymptomatic
- fully assess the possibility of a precipitating allergen
- show empathy and reassure the family that the symptoms are rarely severe and dangerous but explaining what to do if laryngeal swelling should occur
- explain that there is no obvious cause for the urticaria and angio-oedema and it is not uncommon for the cause to remain unknown. So, routine detailed investigations are not justified
- explain that most idiopathic cases may last for a few months before resolving altogether, although occasionally some people go on to have chronic urticaria with recurrent episodes
- have a management plan, including the avoidance of aspirin and opiates and to give regular, non-sedating oral antihistamines for prevention, e.g. cetirizine 10 mg od or loratadine 10 mg od.

3. Discussion related to the case

- This case tests the ability of the candidate to take an accurate history of urticaria (well-circumscribed erythematous weals) and angio-oedema (localized oedema involving subcutaneous or submucosal tissues). It is important to search for an allergic cause although in this case there is no obvious precipitant. If urticaria was due to a physical stimulus such as cold, deep pressure, heat and stress, then avoiding such a known cause is the primary treatment.
- There are two basic pathogenic mechanisms for angio-oedema:
  - *mast cell mediated*: this is usually due to allergens that enhance mast cell release (e.g. food products, insect stings, drugs such as antibiotics or NSAIDs) and is associated with urticaria and pruritus in most cases. In severe episodes, it can lead to bronchospasm or anaphylaxis
  - *bradykinin mediated*: a build-up of bradykinin causes the vasodilation and increased vascular permeability in angio-oedema. A build-up of bradykinin can be due to drugs like ACE inhibitors or to defects in the complement system (e.g. in hereditary angio-oedema due to C1 inhibitor deficiency). Urticaria, pruritus and anaphylaxis are *not* present in this type of angio-oedema.
- Management primarily includes reassurance, avoidance of aspirin and opiates which can degranulate mast cells, and the regular use of oral non-sedating antihistamines which should prevent recurrences. It is important to stress this to the patient, and in the GP letter, that severe angio-oedema with laryngeal

swelling (stridor) will need urgent admission to casualty for emergency treatment and observation.

- The examiner may ask for other possibilities such as contact sensitivity (a vesicular eruption that progresses to chronic thickening of the skin with continued allergenic exposure), atopic dermatitis (a condition that may present as erythema, oedema, papules, vesiculation and oozing), cutaneous mastocytosis (reddish-brown macules, papules and urticaria with pruritus upon trauma), and systemic mastocytosis (episodic systemic flushing with or without urticaria but no angio-oedema).

Comments on the case

This case highlights the importance of taking a good history in the absence of current symptoms, with particular emphasis on precipitating factors.

Case 19 | Funny turns

Candidate information

You are the doctor in a diabetes clinic. Mr Donald Tiverton is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Donald Tiverton, aged 69

Thank you for seeing this gentleman ahead of his routine appointment. He has been having episodes of altered consciousness occurring mainly during the late mornings. He has type 2 diabetes mellitus on insulin and had a CABG in November last year. He is currently under investigation for leg pain with suspected peripheral vascular disease. His current medications includes Humulin M3 bd, aspirin 75 mg od, furosemide 40 mg od, lisinopril 10 mg od, bezafibrate 200 mg bd, and lansoprazole 15 mg od. I am uncertain if these 'funny turns' are due to hypoglycaemia. Please would you advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Donald Tiverton is a 69-year-old retired market trader who has had type 2 diabetes mellitus for 15 years treated with subcutaneous insulin for the last 7 years. He had been reasonably well until the last 2 months when his wife noticed that he was getting drowsier towards noon (before lunch) on most days. According to the wife, these episodes seem to start around 11.30 am. They come on over about 10 min with a sense of oblivion to what is going on around him and he looks pale, sweaty and he mumbles. He has no limb shaking or tongue biting typical of a fit and no collapses typical of a dysrhythmia. Symptomatically, during these episodes, Mr Tiverton feels light-headed and hungry and sometimes has palpitations. When a blood sugar was done on one occasion, it was found to be unrecordable. He eventually comes round after a 'lucozade drink' from the wife. The wife is adamant that these are hypoglycaemic attacks. Mr Tiverton cannot understand why he may be having frequent hypoglycaemic episodes; his diet has not changed (including the timing) and neither has the insulin dose. Previous to these episodes, his hypoglycaemic attacks would occur approximately once every 3 months, usually after an imbalance between the injected insulin and his diet. His activity has not changed and in fact he rarely does much exercise. His glycaemic control is excellent with home glucose monitoring

running mainly between 4 and 8 mmol/L and a recent HbA1c was 6.1%. He takes Humulin M3 using a pen device, 26 units in the morning and 24 units in the evening. His other symptom of note is bilateral leg pains when walking which improve on resting but return when he restarts walking. The pain starts in the left calf followed by the right one. He is awaiting a review by a vascular surgeon for suspected peripheral vascular disease. Two years ago he had persistent, severe, central chest pain and underwent a coronary artery bypass graft (CABG) for coronary artery disease but unfortunately with a suboptimal result due to early graft failure. Presently, his angina is infrequent (treated with sublingual glyceryl trinitrate [GTN] spray) and the cardiothoracic surgeons are not keen to undertake further intervention. His weight is steady. He is under regular follow-up by the ophthalmologist and has not needed retinal laser therapy. His medication includes aspirin 75 mg od, lisinopril 10 mg od, bezafibrate 200 mg bd and lansoprazole 15 mg od and he does not take any extra oral hypoglycaemics. He does not drink alcohol and there is no suggestion of him taking extra doses of insulin surreptitiously. They are concerned about the frequent episodes of possible hypoglycaemia and the wife is worried that she cannot leave him alone at home.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- details of the nature of these 'funny turns', i.e. frequency, timing (e.g. before lunch) and any symptoms of hypoglycaemia (e.g. palpitations, aura, hunger, blurred vision, light-headedness, sweating) and any association with posture or movement
- whether any blood glucose testing was done during these episodes
- the possibility of unawareness and any episodes of unconsciousness
- symptoms suggestive of other possible causes of altered consciousness, e.g. epilepsy, dysrhythmia, postural hypotension, vasovagal syncope, transient ischaemic attack (TIA)
- insulin regime and dose, usual level of control (home glucose monitoring or recent HbA1c)
- if a record of home glucose monitoring is kept and if the patient has it with him
- injection technique and 'lumps'
- diet, use of snacks, timing of meals in relation to insulin doses
- patient's usual pattern of activity and any deviations from it related to these episodes
- macrovascular and microvascular complications of diabetes, especially in view of his coronary artery disease and peripheral vascular disease
- drug history, e.g. β-blockers
- smoking and alcohol history
- suggestions of factitious overdosing of insulin and/or usage of oral hypoglycaemics
- symptoms suggestive of other causes of hypoglycaemia, e.g. endocrine (hypopituitarism, Addison's disease), tumours (insulinoma, sarcomas) and hepatic
- fears and concerns of the patient and the wife.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- consider the differential diagnoses for these episodes
- establish whether the episodes are a fault of the insulin regime or unusual activity or an imbalance with his diet
- appreciate the macrovascular and microvascular complications of diabetes mellitus, giving a differential diagnosis for the leg pain including peripheral vascular disease, neuropathy, nerve entrapment or spinal problems
- provide a management plan (as suggested below) with reassurance.

3. Discussion related to the case

- Hypoglycaemia occurs most commonly as a result of very tight treatment of patients with diabetes melli-

tus. However, a number of other disorders are also associated with hypoglycaemia, including insulinoma (although not in this case), large mesenchymal tumours, end-stage organ failure, alcoholism, endocrine deficiencies, postprandial reactive hypoglycaemic conditions and inherited metabolic disorders. Hypoglycaemia is sometimes defined as a plasma glucose level <2.5 mmol/L. However, the glucose thresholds for hypoglycaemia-induced symptoms and physiological responses vary widely depending on the clinical setting. Therefore, Whipple's triad provides an important framework for making the diagnosis of hypoglycaemia: (1) symptoms consistent with hypoglycaemia, (2) a low plasma glucose concentration and (3) relief of symptoms after the plasma glucose level is raised.

- Hypoglycaemia is a common problem and may result from an imbalance between injected insulin and a patient's normal diet, activity and basal insulin requirements. Before meals are the most hazardous times. Irregular eating habits, e.g. shift work, or exertion and excessive alcohol intake may precipitate an attack. However, changing absorption of insulin (which may be the case here) may also be the cause. It is therefore necessary to take an accurate account of diet including snacks and insulin dose and timing history.
- Worsening renal function (which is not uncommon in a diabetic patient) may also give rise to lower insulin requirements and hypoglycaemic episodes because insulin is excreted via the renal system. Therefore, an assessment of the patient's renal function and possible nephropathy should be in the management plan.
- Hypoglycaemia unawareness refers to loss of the warning symptoms of hypoglycaemia that normally alert individuals to the presence of hypoglycaemia and prompt them to eat in order to abort the episode. This issue must be addressed during the history taking. Some patients who have previously been treated with animal insulins complain of reduced awareness of hypoglycaemia when changed to human insulin.
- Management of hypoglycaemic attacks includes patient education, frequent self-monitoring of blood glucose, realistic glycaemic goals and ongoing professional support. Appropriate adjustments to medications, diet and lifestyle should be recommended. Non-selective β-blockers may attenuate the recognition of hypoglycaemia and they impair glycogenolysis; a relatively selective β1 antagonist (e.g. metoprolol or atenolol) is preferable if a β-blocker is indicated. Management also includes strict avoidance of hypoglycaemia, possibly a change of insulin regime (e.g. basal bolus insulin regime) or in the case of patients previously on animal insulins (who may have insulin antibodies), converting back to a porcine or bovine insulin. Lifestyle factors and diet may need adjusting.
- If the patient is still driving, this issue should be addressed and he should be advised to stop driving until the hypoglycaemia is resolved (especially if he is at risk of hypoglycaemia unawareness). The DVLA should be informed.

Comments on the case

This patient with diabetes has recently developed episodes of hypoglycaemia before lunch. He has a number of macrovascular complications. Although the 'funny turns' are not difficult to elaborate, the history is very suggestive of hypoglycaemic attacks and importance should be placed on why these episodes have developed.

Case 20 | Haemoptysis

Candidate information

You are the doctor in a respiratory clinic. Mr Gordon Bell is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Gordon Bell, aged 75**
>
> Thank you for seeing this man who has had two episodes of haemoptysis during the last 3 weeks. He has a long history of COPD for which he takes beclomethasone, ipratropium, salmeterol and salbutamol inhalers. He has been a chronic smoker for many years. A chest X-ray done last week is reported as normal but I am concerned that we may be missing a neoplasm.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Gordon Bell is a 75-year-old man who has had two episodes of haemoptysis in the last 3 weeks. Both occurred whilst at home in the morning about 2 weeks apart. The haemoptysis was fresh blood with mucoid phlegm, and about a spoonful in volume. He has never had any previous episodes of haemoptysis. He has had COPD for many years. This manifests as breathlessness on exertion, especially on an incline, and he has to stop twice when walking up a flight of stairs. He has no chest pains, ankle swelling, palpitations and loss of weight or appetite. There is no previous history of a deep vein thrombosis, pulmonary embolism, bleeding disorders or tuberculosis. Apart from the inhalers, he takes no other medication and no anticoagulants. He has been a chronic 20-a-day smoker since the age of 14 years and has worked as a plumber all his life. He has been exposed to asbestos during his work with pipe insulation. He lives with his wife in a terraced house and she does most of the household chores. The patient is concerned that he may have lung cancer.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- when was the haemoptysis first noticed and has he coughed up blood before?
- whether the haemoptysis occurs daily or has he had it only once or twice?

- the volume of haemoptysis, e.g. egg-cup full or spoonful
- whether the haemoptysis is fresh, red blood, discoloured brown or mixed in with sputum (colour of sputum, mucoid versus purulent)
- any other associated symptoms such as pleuritic chest pain, dyspnoea, fever, night sweats, syncope, palpitations, or leg swelling suggestive of a deep vein thrombosis
- full idea of his exercise ability, i.e. stairs, distance on the flat or on an incline
- any past history of cardiac, pulmonary (e.g. COPD, childhood pneumonia, tuberculosis) or bleeding disorders
- drug history including anticoagulants
- smoking history
- occupational history, especially asbestos exposure
- family history of tuberculosis
- daily living abilities
- the concerns of the patient, particularly regarding the possibility of lung cancer.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- explain the possible differential diagnoses; although the chest X-ray was normal one still has to consider the potential chance of lung cancer
- give a list of investigations
- explain that he needs a bronchoscopy, giving a description of the procedure
- share a sense of concern with some arrangement for a follow-up appointment to discuss the results.

3. Discussion related to the case

- This case tests the ability of the candidate to create a list of differential diagnoses for haemoptysis. Although this patient has a normal chest X-ray, lung cancer is still the main diagnosis to rule out. A chest X-ray does not necessarily exclude a small bronchial neoplasm. Haemoptyses are also common in patients with COPD, especially during exacerbations. A history of increased sputum volume and purulence with dyspnoea may point to this. Other possibilities include bronchiectasis, pulmonary embolism, infective causes such as tuberculosis and pneumonia and mitral stenosis.
- Investigations should include FBC, U&E, LFT and calcium, ECG, spirometry and oxygen saturation on air. These should help to decide if the patient would be able to tolerate a bronchoscopy. If the bronchoscopy is normal then the next step would be a CT scan of the thorax. Mediastinal nodes are more recently being sampled by endobronchial ultrasound (EBUS) techniques rather than the mediastinoscopy under general anaesthesia (GA) procedure.
- The candidate will be expected to be aware of the bronchoscopy procedure, the use of sedation and the diagnostic and therapeutic scope of this procedure. The examiners will expect the candidate to know the different histological types of lung cancer, the manifestations of lung cancer, i.e. direct/metastatic spread and non-metastatic extrapulmonary manifestations, investigations and treatment, i.e. surgical (including contraindications), radiotherapy, chemotherapy and palliative care. It is recommended that all lung cancer cases are discussed at a multidisciplinary team (MDT) meeting attended by physicians, thoracic surgeons, oncologists, radiologist and pathologists, and that all cases are entered in a national database supported by the RCP in order to assess variations in outcomes across the UK, known as the LUCADA database (LUng CAncer DAta).

Comments on the case

This case tests the ability of the candidate to take a history, paying particular attention to the possibility of cancer. Most patients in these situations want to know if it is cancer or not, so avoiding the matter altogether will do the patient no favours. Although the chest X-ray is normal, the candidate must be able to convey to the patient that this may not rule out the possibility completely and hence it would be wise for the patient to have a bronchoscopy. Most doctors, in the authors' experience, have found that patients are quite keen to undergo such a test for the purposes of reassurance. This case also raises the issue of smoking cessation, though it is usually best to address this at a later date.

Case 21 | Headache

Candidate information

You are the doctor in a neurology clinic. Mrs Sarah Wittington is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Sarah Wittington, aged 45

I would appreciate your help with this pleasant housewife who has had migrainous headaches on and off for 3 years. They usually occur around the left side of her head with occasional vomiting. I have tried paracetamol, codeine and sumatriptan without much help. I am now struggling to control her symptoms. She is normally fit and well but does suffer from bouts of depression for which she takes paroxetine 50 mg od. I could not find any obvious neurological deficits on examining her.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Sarah Wittington is a 45-year-old housewife who has been complaining of episodes of facial pain for the last 3 years. The pain usually begins around the left eye (always the left side), is excruciating in nature and increases in intensity over about 30 min. It may last for up to 2 h, usually occurring at night and with a strange feeling of heaviness on that side of the face with nasal stuffiness. There is no radiation and there are no obvious precipitating factors. These episodes usually keep her awake and tend to occur around once or twice a day for a fortnight and then there are none for about 6–8 months. There has been little relief from painkillers and sumatriptan. She does get another pain that is different from the facial pain. This is a headache with a feeling of a tight band throughout the whole head, throbbing in nature, lasting for around 2–4 h, with no radiation, usually exacerbated by bouts of depression and normally relieved by paracetamol. She has had these headaches for a number of years but it is the facial pain that causes the most trouble. There are no precipitating factors such as straining, coughing or sneezing, nor do they occur on wakening. There is no history of any previous head trauma or seizures. There are no other symptoms of drowsiness, confusion, weakness, ataxia, photophobia, neck stiffness, visual changes or fever. She has had no problems with the teeth, sinuses and

ears or any previous herpetic neuralgia, temporomandibular arthritis or temporal arteritis. She has had depression for 6 years, first presenting as low mood and difficulty in sleeping. She has been on paroxetine 50 mg od during this time. Family rows and worry about the children usually aggravate the depression. She has no other relevant past medical history. Apart from the painkillers and paroxetine, she is on no other medication. She rarely drinks alcohol and smokes five cigarettes a day. She is divorced and has brought up two teenage children single-handedly. Her concerns are that the facial pain is causing the depression to worsen and she is desperate for help.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- that two types of pain are present: facial and headache
- confirm how long the pains have been a problem and if they come on suddenly. How long are the longest pain-free periods? When was the last attack?
- ask exactly where each pain is
- whether the headaches radiate anywhere, e.g. back of head and neck
- if the pains are constant or intermittent and whether they are deteriorating
- if they are worse at any particular time of the day, e.g. on wakening. Does the pain wake her up?
- how long the pains last for
- any particular triggers, e.g. coughing, straining, exertion, stress at work, particular food, bright lights
- any associated drowsiness, confusion, nausea, vomiting, weakness, ataxia, photophobia, neck stiffness, visual changes or fever
- when differentiating facial pain – ask about problems with teeth, sinuses, ears, and elicit any history of herpetic neuralgia, temporomandibular arthritis or temporal arteritis
- any suggestions of depression, anxiety and, if so, how they present
- any recent history of head trauma or seizures
- drug and alcohol history – ask in detail the response to painkillers and 5-hydroxytryptamine (5-HT1) agonists
- a past history of hypertension
- a detailed social history with attention to work and family dynamics
- any concerns she may have and what she thinks the headaches are due to.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- identify and explain the presence of two different pains
- describe the possible causes of these pains
- reassure that it is very unlikely that there is a neoplastic reason for her pains and that there are unlikely to be any serious consequences
- have a management plan, i.e. prevention strategy for the facial pain.

3. Discussion related to the case

- This case tests the ability of the candidate to assemble two lists of differential diagnoses. The facial pain described here is typical of cluster headaches (although more common in males) but other causes of facial pain to be aware of are diseases of the teeth, sinuses, ears and throat, temporal arteritis, postherpetic neuralgia, trigeminal neuralgia, temporomandibular arthritis and glaucoma. The headache she describes sounds like a tension headache exacerbated by depression. Other alternatives include migraine and raised intracranial pressure. If migraine is suspected, the history should also include any prodromal symptoms (classic migraine) with visual symptoms of flashing lights and blind patches together with associated gastrointestinal (nausea and vomiting) and cerebral symptoms and signs such as numbness and weakness of limbs.
- Treatment usually involves reassurance and explanation with particular emphasis on the very remote chance of a neoplasm, particularly in the absence of symptoms and signs such as weakness or paraesthesia.

- The Scottish Intercollegiate Guidelines Network (SIGN; www.sign.ac.uk/guidelines/fulltext/107/index.html) *does not* recommend the need to do further tests such as CT head scans for the investigation of primary headaches unless the following 'red flag' features are present: new onset or change in headaches in patients over 50 years; sudden-onset thunderclap headache; focal neurological symptoms; abnormal neurological examination; headaches that change with posture or wake the patient up from sleep; presence of other comorbidities (e.g. history of cancer, or cerebral venous sinus thrombosis).
- With regard to managing the cluster headaches, prevention is important and in some patients calcium channel blockers (e.g. verapamil) or glucocorticoids have been shown to be useful. The acute attacks can be managed with high-flow oxygen treatment or 5-HT1 receptor agonists (e.g. sumatriptan). The latter has a quicker onset of action and longer pain-free duration if given via the intranasal or subcutaneous routes. Meanwhile, the tension headaches are normally managed adequately with paracetamol (if not, add codeine).

Comments on the case

This case highlights the importance of keeping an open mind after reading the GP's correspondence, i.e. do not assume this is migraine. There are two different types of pain and the candidate must be seen to take a full history of both pains – otherwise it will be impossible to correctly diagnose and manage both symptoms.

Case 22 | Hoarse voice

Candidate information

You are the doctor in a general medical clinic. Mrs Kathy O'Donnell is referred to you by her GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mrs Kathy O'Donnell, aged 49**
>
> Thank you for seeing this lady who has complained of a hoarse voice for 6 months. She smokes 15 cigarettes a day and, after a bout of winter bronchitis 2 years ago, she was started on beclomethasone and salbutamol inhalers. She is also known to have oesophageal reflux for which she takes a maintenance dose of lansoprazole. She has no other past medical history and takes no other medication. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Kathy O'Donnell, aged 49 years, is a Dubliner living in the UK. She works as a barmaid at the local Irish centre. Six months ago she noticed she was becoming a little 'croaky' and 4 weeks later her voice had reached the present degree of hoarseness, remaining unchanged with no particular association with a time of day. She has never had bouts of hoarseness before. She had a lower respiratory tract infection two winters ago manifesting as purulent sputum, wheeze and one episode of haemoptysis (blood mixed in with the sputum) lasting for one day. A chest X-ray at that time was normal. Since then she continues to have a slight cough with mucoid sputum at night and a wheeze in the morning. She was also started on beclomethasone inhaler 200 μg, two inhalations twice a day and salbutamol as needed (usually takes at the same time as the beclomethasone). However, she does admit to having used the inhalers up to four times a day most days of the week for the last 4 weeks. She does not use a volumatic nor gargle after the beclomethasone inhalations. She did not have a hoarse voice when she first started using the inhalers. She still suffers from heartburn particularly at night and she now props herself up with three pillows. She commonly wakes up at night with an acid taste in the mouth. She has had no haemoptysis, chest pain, dyspnoea, dysphagia, loss of weight or noticed any enlarged lymph glands in her neck. She has had no recent coryzal illnesses or sore throat, and no past history of hypothyroidism or exposure to environmental hazards such as

coal fires. She lives with her husband who has been insisting that she should have sought advice about the voice earlier. She has been working at the Irish centre for 16 years and admits that she needs a clear booming voice during work; there have been times when she is unable to make herself heard. She has always been a heavy smoker since the age of 12 and currently smokes 15 cigarettes a day. She does tend to have about three measures of gin per day during her work.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how long the patient has noticed the hoarse voice. Has she had a hoarse voice before?
- how the hoarseness started. Was it after a bout of viral laryngitis? Has the hoarseness plateaued or is it still worsening?
- if the hoarse voice coincided with starting the beclomethasone inhaler
- if she uses a volumatic with the beclomethasone and gargles afterwards. Has she been using the inhalers excessively?
- if she has been overusing her voice
- any associated sore throats and upper respiratory tract coryzal illnesses
- any associated dyspnoea, cough, sputum, haemoptysis, chest pain, heartburn – if so, is it worse at night, does she prop herself up at night?
- any associated dysphagia with aspiration
- any associated symptoms suggestive of hypothyroidism
- recent inhalational history, e.g. exposure to fire/smoke
- drug history
- smoking history
- occupational history – whether she needs her voice at work. What does she use her voice for, e.g. announcements, etc?
- her concerns and the impact of the hoarseness on her work and family life
- if she would be receptive to smoking cessation advice.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assemble the possible differential diagnoses
- explain the possible causes of the hoarse voice
- explain and describe a plan of investigations
- arrange follow-up soon to discuss any results.

3. Discussion related to the case

- The hoarseness of the voice in this case could be due to a number of possibilities: chronic laryngitis secondary to corticosteroid inhaler or gastro-oesophageal acid reflux disease or even overuse, laryngeal polyp, laryngeal carcinoma, vocal cord paralysis secondary to lung cancer and, rarely, thyroid masses or hypothyroidism.
- Investigations in this case would be firstly a chest X-ray to rule out a bronchial neoplasm with left recurrent nerve palsy (although this does not truly cause a hoarse voice), routine blood tests and most importantly, asking an ear, nose and throat (ENT) surgeon to have a look at the vocal cords with a laryngoscope.
- If there are no vocal cord lesions, e.g. polyps or evidence of *Candida*, but only inflammation, this may suggest acid reflux as the cause and this will need to be addressed appropriately. Evidence of *Candida* suggests that the beclomethasone is the cause. This should be addressed by advising the patient to take the beclomethasone less often, using a volumatic that would prevent the aerosol impacting on the pharynx and larynx, and gargling after inhalation.

Comments on the case

This is a common case and highlights the importance of taking all the details of inhaler usage with particular timing to the onset of hoarseness. The candidate must ascertain the impact of the symptoms on the patient's work.

Case 23 | Hypercalcaemia

Candidate information

You are the doctor in a general medical clinic. Mrs Freda Davidson is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Freda Davidson, aged 53

Thank you for seeing Mrs Davidson who, after a routine blood test, was found to have a calcium level of 2.84 mmol/L and an albumin level of 39 g/L. She has a past history of peptic ulcer disease 10 years ago and takes fluoxetine for depression.

Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Davidson is a 53-year-old housewife who has been found to have hypercalcaemia on routine testing by the GP. She is normally well although she has bouts of tiredness which she puts down to not being able to sleep at night. She has no obvious GI symptoms apart from a poor appetite and a tendency towards constipation if she is not careful with her diet. She has a history of depression for the last 4 years after the death of her mother. Presently she feels low in mood with some loss of self-esteem. She is on fluoxetine for this. Ten years ago she presented to hospital with dyspepsia and an upper GI endoscopy revealed a duodenal ulcer. This was treated with antacids but she does occasionally have dyspeptic symptoms, particularly after a spicy meal. She has no bony pain, nor any past history of renal stones. She lives with her husband and generally leads a fairly active life running the household, doing the shopping and cleaning. She does not smoke or drink and she takes no other medication. There is no family history of hypercalcaemia. She is on a normal diet with no real excessive intake of dairy products. Mrs Davidson is not quite sure why she has been referred to the specialist.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the history of the symptoms relevant to hypercalcaemia, e.g. tiredness, malaise, depression, abdominal pain (e.g. from a peptic ulcer), constipation, urinary symptoms and renal colic from stones, bony pain, etc.
- symptoms suggestive of respiratory disorders (e.g. sarcoidosis), gastrointestinal disorders (e.g. peptic ulcer), endocrine disorders (e.g. thyrotoxicosis), malignancy (bony secondaries from breast and lung, lymphoma, myeloma)
- history of the depression
- drug history (i.e. any vitamin D analogues, thiazides, lithium)
- family history (hypocalciuric hypercalcaemia)
- immobility
- concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- take a history relevant to hypercalcaemia
- determine any specific cause for the hypercalcaemia
- ascertain the history of the peptic ulcer and the depression and to think about a possible link
- explain to the patient the biochemical findings
- have a plan of further investigations and management.

3. Discussion related to the case

- Hypercalcaemia can be due to:
  - excessive parathyroid hormone secretion (primary, tertiary or ectopic, lithium and hypocalciuric hypercalcaemia)
  - excessive vitamin D (vitamin D intoxication, sarcoidosis and other granulomatous diseases)
  - malignancy (breast, lung, haematological), but unlikely if asymptomatic
  - high bone turnover (immobility)
  - drugs (thiazides, vitamin D analogues)
  - endocrine factors (hyperthyroidism).
- Primary hyperthyroidism is the most common cause of hypercalcaemia discovered by chance. Hypercalcaemia from any cause can result in fatigue, depression, mental confusion, anorexia, nausea, vomiting, constipation, short QT interval on the electrocardiogram and, in some patients, cardiac arrhythmias. There is a variable relation between the severity of the hypercalcaemia and the symptoms. Generally, symptoms are more common at calcium levels >2.9–3 mmol/L but some patients, even at this level, are asymptomatic. When the calcium level is >3.2 mmol/L calcification in the kidneys, skin, vessels, lungs, heart and stomach can occur and renal insufficiency may develop, particularly if the blood phosphate levels are normal or elevated due to impaired renal function. Severe hypercalcaemia, usually 3.7–4.5 mmol/L, can be a medical emergency as coma and cardiac arrest can occur. Hypercalcaemia in an adult who is apparently asymptomatic is usually due to primary hyperparathyroidism. In malignancy-associated hypercalcaemia it is the malignancy that brings the patient to the physician and the hypercalcaemia is discovered during the routine investigations. Investigations include serum calcium, phosphate and parathyroid hormone levels.
- Parathyroid hormone values are elevated in >90% of parathyroid-related causes of hypercalcaemia; are undetectable or low in malignancy-related hypercalcaemia (which may be due to secretion of an ectopic hormone known as parathyroid hormone-related protein, PTHrP); and undetectable or normal in vitamin D-related and high bone turnover causes of hypercalcaemia.
- Therapy for primary hyperparathyroidism is primarily surgical, particularly in those with stones, bony involvement, calcium levels above 2.9 mmol/L or a previous episode of severe acute hypercalcaemia.
- The candidate will be expected to discuss preoperative localization investigations, especially the role of MRI, radioisotope subtraction scanning and the management of acute hypercalcaemia.

Comments on the case

This case presents with an abnormal biochemical finding and the candidate will be expected to tailor the history towards finding a cause and recognizing that previous medical illnesses may be related.

Case 24 | Hyperlipidaemia

Candidate information

You are the doctor in the diabetes clinic and the GP has written a note about this patient whom you are about to see for his annual review.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr David Palmer, aged 54

Please would you advise on the treatment of this gentleman's hyperlipidaemia. He is a known diabetic and his total cholesterol level was 7.0 mmol/L 6 months ago. I started him on a statin and after 3 months his cholesterol fell to 5.4 mmol/L with an HDL cholesterol of 1.5 mmol/L and a raised triglycerides (fasting) level of 4.5 mmol/L. At this recent visit, I also found proteinuria on urine dipstick. He is overweight and dietary advice has been unsuccessful. His medication is currently Novorapid insulin tds, Insulatard insulin noct, metformin, atorvastatin, perindopril and aspirin.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr David Palmer is a 54-year-old ex-taxi driver who was found to have a raised cholesterol (7 mmol/L) 6 months ago after a routine visit to the GP's diabetic surgery. He was started on atorvastatin and a repeat cholesterol 3 months later showed the cholesterol to have dropped to 5.4 mmol/L. He is reasonably well in himself and is self-caring. He has had diabetes mellitus for 8 years for which he takes insulin four times daily by Novopen (Novorapid 12 units before meals tds and Insulatard 18 units at night). He developed diabetic retinopathy for which he has had laser treatment to both eyes 2 years ago; poor vision was the reason for him giving up work. He also has had numbness of both feet and was found to have proteinuria on urine dipstick 3 months ago by the GP. He has a history of hypertension for 8 years for which he initially took bendroflumethiazide. However, 4 years ago he had an episode of gout and the thiazide was changed to an ACE inhibitor (perindopril). He does not have a history of ischaemic heart disease but his father died of an MI when he was young. Despite dietary advice from the practice nurse, he is struggling to keep his weight down (he is presently 92 kg) and he does not want to increase his insulin dose any further as he worries that this may increase his weight. He does not think he eats

excessively. He has three meals a day; breakfast includes cereal and buttered toast, followed by lunch which usually consists of salad and buttered sandwiches and in the evening a cooked meal usually pork with potatoes and vegetables. When he increases his insulin, he does notice his appetite increases as well and he has a tendency to have snacks between meals with resulting weight gain. Home monitoring of glucose reveals levels between 8 and 13. Other medications include metformin 500 mg tds and aspirin 75 mg od. He smokes five cigarettes a day and is trying to cut down. He used to smoke 20 a day but, as he does not work, stopping altogether has been difficult. He does not undertake any exercise. He drinks on average 3 pints of beer a day and lives with his wife and three grown-up children. He does not seem too concerned about the hyperlipidaemia as he is not symptomatic from this, but he is slightly concerned about the urine protein finding.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the details of the hyperlipidaemia (some patients will know the exact lipid values)
- cardiovascular history – suggestive of ischaemic heart disease and of peripheral vascular disease
- full diabetic history including micro- and macrovascular complications. Treatment of diabetes
- history of hypertension
- smoking history
- family history of ischaemic heart disease and hyperlipidaemia
- a full dietary, alcohol and exercise history
- concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- ascertain the cardiovascular risk factors in this patient
- explain the importance of minimizing these risk factors by improving glycaemic control and hence the need for reducing weight and alcohol intake, increasing insulin, stopping smoking, keeping blood pressure and lipids stringently under control and improving daily life activities, e.g. more exercise, weight control, etc.
- explain that total calorie intake (alcohol and dietary fat) is excessive and this must be reduced. Also explain that increasing the insulin dose increases food intake and hence the weight gain
- explain the possible significance of the proteinuria and the need for doing further tests, i.e. urine albumin/creatinine ratio, 24-h urine protein collection, renal function tests
- address any concerns, particularly the balance between the increase in insulin dose and the possible weight gain.

3. Discussion related to the case

- This patient has numerous cardiovascular risk factors which need to be addressed. He has hyperlipidaemia (although with a relatively good high-density lipoprotein [HDL] level), hypertension, diabetes mellitus, family history and he also smokes and drinks.
- The cardiovascular risk in patients with type 2 diabetes without a history of MI is said to be equivalent to that of a non-diabetic patient who has had an MI. Instead of defining treatment cut-off levels for hypercholesterolaemia, the use of cardiovascular risk profiles ought to be favoured. Previous recommendations have been for the treatment of elevated blood pressure with a cardiovascular risk of >15% over 10 years and treatment of elevated cholesterol with a cardiovascular risk of >30% over 10 years. However, these cut-off levels were believed to be mainly financially driven and recommendations for the treatment of cholesterol with cardiovascular risks of >20% are becoming acceptable. The traditional risk calculations, however, will not apply in this case as the patient has established proteinuria which increases the risk a further 2–3 times. Many physicians would treat as for secondary prevention in these cases. With respect to proteinuria and hypertension, the current debate is whether treatment should be with an ACE

inhibitor, an angiotensin II receptor antagonist or both.

- It has been shown in the Steno-2 study that intensive multifactorial intervention for patients with type 2 diabetes mellitus (i.e. aiming for intensive control of hyperglycaemia, hypertension, hyperlipidaemia and microalbuminuria) reduces the risk of cardiovascular disease and microvascular complications by 50% over an 8-year period.
- As well as improving glycaemic control, general management should include further advice on diet, especially reducing fat intake, alcohol, weight and exercise, considering increasing the dose of atorvastatin, adding a fibrate and considering the use of fast-acting insulins (Humalog and Novonorm) as these possibly help with weight control as there is no need for snacks.
- Discussion with examiners may include the increased risk of side-effects of statin plus fibrate combinations (gemfibrozil and cerivastatin combination led to the withdrawal of the latter) and combined use of thiazides and β-blockers may adversely affect the lipid profile. The candidate will be expected to know the up-to-date guidelines for hyperlipidaemia management.

Comments on the case

This is a complicated case and tests the ability of the candidate to assess the many possible risk factors rather than purely focusing on the hyperlipidaemia.

Case 25 | Jaundice

Candidate information

You are the doctor in a gastroenterology clinic. Mr Brian Jones is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Brian Jones, aged 56**
>
> Thank you for seeing this solicitor who has complained of jaundice with right hypochondrial pain, malaise and nausea for the last 4 days. He has had arthritis of his hip since breaking his femur in a road traffic accident 16 years ago. For this he takes co-codamol. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Brian Jones is a 56-year-old solicitor, working in the city centre, who complains of a sudden onset of jaundice 4 days ago with right hypochondrial pain. The jaundice has progressed during these 4 days but there are no pale stools and only slight discolouration of the urine. The pain is a dull, constant ache and is worse on deep inspiration. There is also malaise, nausea with loss of appetite and a loss of weight of 2 kg. He has no abdominal swelling, haematemesis, melaena, vomiting, pruritus, fever, peripheral oedema or altered sleep pattern. Past medical history includes a road traffic accident, as a pedestrian, 16 years ago, when he broke the neck of his femur. Despite repair, he has suffered from subsequent arthritic pain for which he takes co-codamol regularly. This pain is sometimes severe enough to affect his sleep and cause depression. Occasionally, he has taken more than the prescribed dose of co-codamol but has not taken any overdoses. He says he drinks 'socially' but more detailed questioning reveals that he has been a heavy consumer for 12 years, drinking two bottles of wine a day, particularly after work with clients. He does admit to drinking heavily during 'working lunches' as well. He does not drink beer but has some spirits at home in the evening, usually two measures of whisky. He does not drink in the morning nor does he suffer from any early morning withdrawal tremor. He believes he had a blood transfusion at the time of his fractured hip but no recent transfusions. There has been no recent travel abroad nor are there any obvious HIV risk factors. There is no past history of autoimmune illnesses. He was divorced 6 years ago and he lives alone. He has had one conviction for drink-driving 3 years ago.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- when the patient first noticed the jaundice, whether it is gradually progressing and if the skin and sclerae are yellow
- any previous episodes of jaundice and any family history of jaundice
- associated pruritus, discoloured stools or urine (implying biliary obstruction)
- any abdominal pain and its nature
- any associated symptoms, including nausea/vomiting, haematemesis, fatigue, malaise, fever, loss of appetite, weight loss, rash, arthritis, peripheral oedema, abdominal swelling, confusion/altered sleeping pattern (encephalopathy)
- any respiratory or cardiac symptoms
- full alcohol history, including drinking at work. CAGE questionnaire, driving offences, psychological and social problems as a consequence
- any relevant past medical history, e.g. liver and gallstone disorders, malignancy, recent anaesthesia (especially halothane), blood transfusions, history of other autoimmune disorders, e.g. coeliac, diabetes, hypothyroidism, etc. important for primary biliary cirrhosis and autoimmune hepatitis
- a full drug history, including antibiotics, paracetamol (any overdoses in an attempt to relieve arthritic pain) and antirheumatic drugs
- any risk factors for viral hepatitis, e.g. A (travel abroad, shell-fish consumption), B and C (intravenous drug abuse, tattoos, sexual)
- other risk factors for hepatitis, such as blood transfusion, contact with environmental sources, e.g. leptospirosis.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- create a list of differential diagnoses
- ascertain any risk factors for hepatitis
- have a plan for investigations
- be able to approach the patient about the high alcohol consumption with regard to encouraging abstinence and offering help, especially counselling
- address any concerns the patient may have, especially with regard to the possibility of cirrhosis or cancer
- gain an insight into any psychological difficulties which may be associated with the high alcohol consumption, especially depression, and also gain an appreciation of the impact the current illness may have on his work
- arrange a follow-up appointment to discuss the results of investigations.

3. Discussion related to the case

- Causes of painful jaundice include hepatitis (alcoholic, infective, drug induced, Wilson's disease), biliary colic, pancreatitis, cholecystitis, metastatic and Budd–Chiari.
- Causes of painless jaundice are haemolysis (hyperbilirubinaemia, Gilbert's), pancreatic or biliary malignancy and hepatic cirrhosis, e.g. related to alcohol, haemochromatosis (associated with arthritis), primary biliary cirrhosis (itching and malaise).
- This case tests the ability of the candidate to develop a list of differential diagnoses for jaundice (painful versus non-painful) and to ask appropriate questions to decide which particular diagnosis fits the case best. The most likely diagnosis is alcoholic hepatitis. However, questioning should reflect the possibility of other diagnoses such as obstructive jaundice (e.g. gallstones), viral hepatitis and liver metastases.
- The candidate's plan of initial investigations should include FBC, U&E, LFT, GGT, clotting, glucose, viral hepatitis screen, cytomegalovirus antibodies, autoimmune antibodies (antimitochondrial antibodies, anti-liver kidney microsomal antibodies [anti-LKMA], anti-smooth muscle antibodies, immunoglobulins), α-fetoprotein, ferritin and total iron-binding capacity, caeruloplasmin.
- Imaging is extremely important and an abdominal ultrasound would be first line.
- For discussion, the candidate will need to know the causes of jaundice and cirrhosis, the pathological changes of alcoholic liver disease, the consequences of the alcohol dependency syndrome, i.e. physical, psychological and social, management of liver failure and complications of portal hypertension.
- A common discussion topic is management of the alcoholic patient with regard to recognition and counselling. The CAGE questionnaire has been developed to aid the identification of alcohol abuse and a detection rate of up to 70% has been claimed in those who say yes to two or more of the following four questions: (1) have you ever felt you ought to Cut down your drinking? (2) have people Annoyed you

by criticizing your drinking? (3) have you ever felt bad or Guilty about your drinking? (4) have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover? (Eye opener).

Comments on the case

This case typifies the common scenario of a patient underestimating the quantity of alcohol he consumes. The candidate must not just assume that 'social drinking' equates to one pint per evening; the candidate's and the patient's definition of a 'social drinker' may have no concordance. The candidate must be prepared to burrow further into the alcohol history with recognition of the possible psychological and social consequences.

Case 26 | Joint pains

Candidate information

You are the doctor in a rheumatology clinic. Mrs Margaret Rees is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Margaret Rees, aged 35

Thank you for seeing Mrs Rees who has complained of painful, swollen joints in her hands during the past 5 weeks. This is associated with tiredness particularly in the mornings. She is finding that her symptoms are interfering with her work and she has now taken the last 2 weeks off as sick leave. She presently takes co-codamol and she is intolerant of NSAIDs, as they exacerbate her oesophageal reflux. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Margaret Rees is a 35-year-old right-handed lady who works behind the counter at the local LloydsTSB bank. Over the last 5 weeks she has complained of a gradual onset of swollen, painful joints in the proximal interphalangeal (PIP) and metacarpophalangeal (MCP) distribution of both hands (initially the right). This is associated with stiffness particularly in the mornings which improves with usage of the hands, and generalized tiredness that may on occasions persist throughout the day. Her pain, swelling and stiffness are worse in the right hand than the left. The only other joint affected is the right shoulder. There are no obvious precipitating factors but gentle activity may improve the stiffness. There are no associated skin rashes, nodules, nail changes, sensory loss or radiation of the pain in the hands. Other general symptoms of the respiratory, neurological or ophthalmic systems are absent. There have been no acute episodes of swelling. Her symptoms are particularly affecting her ability to write and type, which are essential for work, and because of this and the tiredness she has taken the last 2 weeks off work. This is particularly upsetting as she never takes time off and she is worried that she may be made redundant. Another disability she has noticed is with buttoning up her blouses. She is taking co-codamol without a great deal of relief. She also takes a maintenance does of lansoprazole for oesophageal reflux and because of this she is intolerant to NSAIDs.

There is no other past history of arthritis, autoimmune disorders, recent infections or trauma. Her mother suffered with osteoarthrosis when in her seventies. She does not smoke or drink alcohol. She lives with her husband and two children who are very supportive. She is naturally anxious as to whether this may be rheumatoid arthritis and if so about any potential long-term disability.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- which joints in the hands are affected.
- if other joints are affected, e.g. wrists, shoulders, neck, back, hips, knees, feet, etc.
- how long has the swelling been present for, if there are any acute attacks of swelling and if so how often and what precipitates an attack
- whether the swelling affects both hands at the same time (symmetrical arthropathy)
- any associated pain with radiation, morning stiffness, skin rash, nodules, sensory loss
- other general symptoms related to systemic rheumatological disorders, e.g. fatigue, malaise, fever, eye changes, respiratory, neurological
- history of the oesophageal reflux and inability to tolerate NSAIDs
- detailed occupational history with any history of repetitive strain injuries or trauma
- any disability, e.g. dressing, writing, using cutlery, socially and at work, e.g. typing
- any past medical history, e.g. connective tissue disease, vasculitis, autoimmune disorders, infections, GI disorders (cirrhosis, peptic ulcer), skin disorders, e.g. psoriasis
- any family history of rheumatoid arthritis
- a drug history, e.g. thiazides precipitating gout, procainamide or hydralazine causing lupus erythematosus and ask if the patient is intolerant of NSAIDs as this may determine certain pharmacological therapy regimens
- a smoking and alcohol history
- concerns of the patient (social and work).

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- explain the possible diagnoses
- express that the diagnosis may be rheumatoid arthritis but it is impossible to comment at this stage on long-term prognosis
- show full understanding, with empathy, about the restriction on her daily activities
- describe in detail the necessary tests to be performed
- illustrate that you would like to admit her to carry out these tests and to start therapy once the diagnosis is made
- attempt to reassure her that alternative treatments other than NSAIDs are available for rheumatoid arthritis
- endeavour to address any other concerns she may have.

3. Discussion related to the case

- This case tests the candidate's ability to take a detailed joint history and to consider the primary diagnosis of rheumatoid arthritis, with particular relevance to the systemic symptoms. Other possible diagnoses to be considered are other seronegative arthropathies such as psoriasis or Reiter's, both of which may present with asymmetrical distal interphalangeal joint arthropathy. Nodal osteoarthrosis rarely presents under the age of 50.
- The candidate should consider admission with a plan of investigations: full blood count, urea and electrolytes, liver function tests, erythrocyte sedimentation rate (ESR), serology (rheumatoid factor which is present in approximately 70% of cases, anti-cyclic citrullinated peptide [anti-CCP] antibodies), full autoimmune screen (e.g. antinuclear antibodies, antineutrophil cytoplasmic antibody [ANCA], complement levels and other autoantibodies for conditions like SLE, dermatomyositis, etc. if indicated).
- X-rays of the affected joints should be requested and aspiration of a joint performed if an effusion is present with culture for bacteria. Further imaging of the joints, e.g. MRI scan, may be required, especially

if the neck is involved. Physiotherapy input may also be considered.

- The candidate would be expected to have a detailed knowledge of the systemic effects of rheumatoid arthritis, its immunopathology, the role of disease-modifying antirheumatic drugs and their potential side-effects and the development of the new anticytokine therapies such as anti-tumour necrosis factor (TNF)-α monoclonal antibody.

Comments on the case

This case highlights the importance of taking a detailed 'impact of symptoms' history. The history is typical for rheumatoid arthritis but extra marks will be awarded if the candidate can visualize the patient in the social setting with the burden of her illness on work and family life. This case will also test the ability of the candidate to address the anxieties and concerns that the patient may have.

Case 27 | Loin pain

Candidate information

You are the medical doctor in an endocrine clinic and about to see this patient for his annual review. The GP has sent a letter with the patient.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Ronald Tweedle, aged 76

Thank you for seeing Mr Tweedle whom you see for acromegaly on an annual basis. He has been complaining of recurrent left-sided loin pain which has been getting gradually worse over the last 3 weeks. He was treated for a UTI with trimethoprim but his pain has not resolved.

Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Ronald Tweedle, a 76-year-old gentleman, presents with a 3-week history of left-sided loin pain. The pain may come on at any time of the day; it is usually severe, sharp and intermittent and may last up to 2 hours. Sometimes the pain radiates anteriorly but there is no dysuria or haematuria. He has had these pains now on two separate occasions. The GP made a home visit each time and gave voltarol, which resulted in some relief, and trimethoprim to cover any infection. He has a previous history of a staghorn calculus in the right kidney which was surgically removed 12 years ago. He has been otherwise well in himself and only suffers symptomatically from prostatism which manifests as postmicturition dribbling with poor stream. He is on finasteride for this. He also has a previous history of acromegaly 20 years ago which was treated surgically and he is under regular yearly follow-up in the endocrine clinic. He has some residual peripheral visual field loss, but the acromegaly is inactive at the moment. A recent CT scan of the head showed no recurrence of the tumour. He has a past history of sick sinus syndrome presenting as dizziness and bradycardia for which a pacemaker was inserted 8 years ago. He takes ramipril for hypertension. He lives alone in a ground-floor flat. He is self-caring and he does not smoke or drink. He is concerned about the possibility of recurring renal stones.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a complete history of the pain, i.e. frequency, position, radiation, nature, relieving/exacerbating factors (e.g. alcohol, drinking large quantities of fluids), associated dysuria, haematuria, history of prostatism
- previous history of renal stones, presence of hypercalcaemia at the time
- history of acromegaly and particularly ascertaining the activity, i.e. worsening visual field defects, sweating, headaches, etc. Other symptoms, e.g. change in appearance, increased size of hands, ring tightening, deep/hollow voice, tiredness, impotence or poor libido
- history of other features resulting from acromegaly, e.g. hypertension, heart failure, arthropathy, carpal tunnel syndrome, diabetes mellitus, galactorrhoea, goitre
- when the pacemaker was inserted and what type – this would be a contraindication for MRI scanning
- other drug history
- social history
- concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- ascertain that the history does sound like renal stones and correctly establish the previous history of renal calculi
- link the acromegaly with the renal calculi and the cardiovascular disease
- provide a plan of action for the patient.

3. Discussion related to the case

- Differential diagnoses in this case would be renal stones, pyelonephritis and prostatic obstruction predisposing to hydronephrosis.
- Investigations would include blood tests for calcium and urea/electrolytes, mid-stream urine (MSU), a plain abdominal X-ray and an intravenous urogram.
- Long-term sequelae of acromegaly potentially include the deficiency of other pituitary hormones; visual loss due to compression of the optic nerve; impaired glucose tolerance and diabetes; hypertension; renal stones due to increased urinary excretion of calcium; increased risk of gastric and colonic neoplasms; skeletal problems such as kyphosis, scoliosis and accelerated osteoarthrosis; cardiac problems including accelerated atherosclerosis and cardiomyopathy; overgrowth of soft tissues which may not entirely resolve after treatment, including a goitre and nerve entrapment syndromes such as carpal tunnel syndrome. Skin changes in acromegaly include acral bony overgrowth (frontal bossing), soft tissue swelling, excessive sweating and hypertrichosis.

Comments on the case

This is quite a typical case where the past medical history is 'retrospectively' interlinked and hence it is vitally important not to dismiss past illnesses but to speculate on any possible connection with the present symptoms.

Case 28 | Loss of weight

Candidate information

You are the doctor in a general medical clinic. Mrs Marlene Llewellyn is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Marlene Llewellyn, aged 40

Thank you for seeing Mrs Llewellyn who has complained of a 5 kg loss of weight over the last 6 months. Her appetite is good but she has noticed an increasing frequency of bowel actions during the last few weeks. She has a past history of anxiety for which she takes zopiclone. A recent FBC, U&E, LFT and chest X-ray are all normal. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Llewellyn is a 40-year-old housewife who has complained of a 5 kg loss of weight over the last 6 months, from 54 kg to 49 kg. She has always been thin. She first noticed the weight loss when her clothes started to feel looser and the children were saying that she looked much thinner than before. She eats well and there has been no loss of appetite. Her diet is non-vegetarian with fresh fruit and cereals in the morning, followed by a sandwich at lunch and usually a cooked meal with meat and potatoes in the evening. She does no physical exercise apart from her daily living activities. There has been no purposeful dieting and no abuse of laxatives or diuretics. She has no other bowel symptoms apart from occasional loose stools recently but no steatorrhoea. Normally she goes once a day but in the last few weeks it has been up to three times a day. There is no constipation, rectal bleeding, nausea/vomiting, vaginal bleeding, cough, sputum or haemoptysis. Her past medical history includes an anxiety neurosis for which she takes zopiclone. She continues to feel 'on edge' most days with occasional tremors and palpitations during the anxious episodes, which are usually triggered by family rows. Recently she has noticed that she is not sleeping well with early morning wakening. She has smoked 10 cigarettes a day since the age of 16 and does admit to smoking more when she is anxious. She does not drink alcohol but her husband drinks heavily and this exacerbates her worries. She lives in a three-bedroom semi-detached house in a deprived area with her husband and two

children. She has always been a housewife. She cannot understand why she is losing weight despite an unchanged diet.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- if the patient feels her clothes are looser, whether she is looking thinner and if friends/family have noticed any change
- how much weight she has lost. Take a dietary history with assessment of intake and any change in appetite
- if the weight loss is intentional, e.g. dieting, exercise, laxatives/diuretics
- a previous history of weight loss
- previous body weight
- associated GI symptoms, e.g. dysphagia, abdominal pain, nausea/vomiting, GI bleeding, altered bowel habit, steatorrhoea
- endocrine symptoms, e.g. thyrotoxicosis (tremors, increased appetite, diarrhoea, palpitations, eye symptoms), adrenal insufficiency (weakness, dizziness, excessive sweating)
- other cardiovascular and respiratory symptoms
- drug history, especially diet pills, laxatives, amphetamines
- symptoms suggestive of anxiety and depression
- social history, recent separation or job loss/change
- alcohol and smoking history (smoking reduces appetite)
- other past medical history, e.g. GI disorders, emphysema, neoplasia, diabetes mellitus
- the patient's concerns regarding the weight loss.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- create a list of differential diagnoses
- plan a list of investigations
- convey these to the patient with explanations
- educate her on the hazards of smoking
- arrange quick follow-up with reweighing and to discuss the results of investigations.

3. Discussion related to the case

- This case tests the ability of the candidate to decide if the loss of weight is non-gastrointestinal, e.g. thyrotoxicosis or anxiety/depression, or gastrointestinal, e.g. primary neoplasm, malabsorption (coeliac disease, Crohn's disease), poor dietary intake as a result of alcoholism or functional dyspepsia/peptic ulcer. Do not forget the possibility of intercurrent disease.
- Investigations including FBC, U&E, thyroid function tests (TFT), LFT, GGT, glucose, chest X-ray and, if these are all normal, one may consider looking specifically for gastrointestinal causes.
- If all investigations are normal, observation of her weight with a daily food diary over a few weeks/months may be necessary.
- The diagnosis here is between an anxiety neurosis and thyrotoxicosis. The anxiety neurosis may well be exacerbated by thyrotoxicosis and it is not uncommon for patients to be labelled 'anxious' only to subsequently find that they are thyrotoxic. The candidate will be expected to describe the systemic effects of thyrotoxicosis, the complications (e.g. crises) and treatment (antithyroid drugs versus radioactive iodine versus thyroidectomy).

Comments on the case

This is a common general medical case of 'weight loss ?cause'. Do not assume the weight loss is psychological or gastrointestinal. The clues are in the history and you must have made a mental note of all the possible causes before the consultation in order to tailor the history along the lines of that list. If you feel the case may be thyrotoxicosis, then you can really concentrate specifically on the long list of possible symptoms to gain extra marks. Again, you must have a plan of investigations on hand and be prepared to reply to the patient's question, 'Have I got cancer?'.

Case 29 | Lower gastrointestinal haemorrhage

Candidate information

You are the doctor in the gastroenterology clinic. Mr John Davies is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr John Davies, aged 53

Thank you for seeing Mr Davies so quickly. He has complained of rectal bleeding for the last 3 weeks without any loss of weight. His past medical history includes osteoarthritis of both knees and haemorrhoids. He takes diclofenac only. I am concerned that he may have a neoplasm. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr John Davies is a 53-year-old car mechanic who one morning 3 weeks ago noticed dark red blood mixed in with his stools at the bottom of the toilet pan. He thought at first that this was from his haemorrhoids but these normally present intermittently with bright red blood on the toilet paper and not mixed in with the stools. The blood is present every day and he passes stools regularly once a day. There has been no change in his bowel habit, and he has had no haematemesis, loss of weight, abdominal pain, diarrhoea, vomiting, jaundice, hypochondrial tenderness or malaise. He does not suffer from urgency, tenesmus or pain on passing stools. He has not noticed any lumps protruding through his anus. He has had haemorrhoids for many years and the last time he noticed any blood from these was 3 months ago. The new symptom is definitely different. There is no other history of bleeding disorders, other GI history or of food poisoning. He takes diclofenac for his arthritis but does not suffer from NSAID-induced dyspepsia. There is no other relevant drug history, e.g. iron or bismuth. There is no family history of polyps or colonic carcinoma. He does not drink or smoke. He lives with his wife and both lead active lifestyles. Mr Davies is naturally concerned that this may be cancer.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- if he had passed blood rectally before and, if so, the nature and frequency of this
- the description of the present blood in the stools, e.g. fresh red blood, dark red or black, mixed with stool, on the surface of the stool or on the toilet paper only. How much blood and mucus is present
- any associated diarrhoea or any nocturnal diarrhoea (sometimes seen in ulcerative colitis)
- how often he passes bloody stools in a day
- any change in bowel habit
- if he has abdominal pain, urgency or tenesmus when passing stools
- any straining, constipation, anal pain (fissure), rectal lumps/masses
- any weight loss and, if so, over how long a period
- any associated symptoms such as loss of appetite, nausea, vomiting, haematemesis, abdominal mass, fatigue and tiredness, and bleeding elsewhere
- other previous GI history, haemorrhoids, bleeding disorders, food poisoning
- drug history especially NSAIDs, anticoagulants, iron and bismuth (black stool not red)
- alcohol history
- family history of GI neoplasia, polyps
- concerns regarding cancer.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- decide clearly the difference between the previous rectal bleeding and the present symptom
- explain that cancer cannot be totally excluded unless the proper investigations are carried out
- explain what these investigations are and describe what is involved with a sigmoidoscopy, double-contrast barium enema and, if needed for confirmation of doubtful lesions, a colonoscopy, including the description of preoperative sedation, biopsies and retaining of tissue for histology.

3. Discussion related to the case

- The case tests the ability of the candidate to compare the present history with the past symptoms and to judge if these are from the same aetiology or not. The history of the previous haemorrhoids is clearly different from the present symptom. The most worrying differential diagnosis includes a lower GI neoplasm, the history of which can sometimes point to the possible site of the cancer, e.g. altered bowel habit with or without abdominal pain is common in descending colonic lesions, rectal and sigmoid carcinomas tend to present with bleeding commonly mixed in with stools, and caecal lesions may just present with an iron deficiency anaemia and no other obvious bowel symptom. Other possibilities include colonic and/or rectal polyps which may intermittently bleed, particularly the larger ones, colitis such as ulcerative colitis although diarrhoea is more common with bleeding, diverticular bleeding which can occasionally be massive and can be detected on double-contrast barium enema as pouches of mucosa extruding through the muscular wall. Haemorrhoids and anal fissures present with fresh bleeding with pain on defaecation (particularly with the fissures). Angiodysplasia may also be a cause of lower GI bleeding. The candidate should have a plan of investigations including full blood count, routine biochemistry, flexible sigmoidoscopy, double-contrast barium enema (good preparation essential), and colonoscopy to confirm the presence of a suspicious lesion.
- The candidate will be expected to discuss the importance of neoplastic polyps with regard to transformation to carcinoma, genetics of colonic carcinoma, use of faecal occult blood testing, screening and prevention, and treatment (surgical and chemotherapy).

Comments on the case

This case is an important one to stress the importance of collating details of the previous haemorrhoid history and comparing this to the present history. The candidate will get extra marks if he/she makes it obvious to the examiner that the line of questioning is conforming to his/her thought processes whilst searching for the possible site of the lesion.

Case 30 | Macrocytic anaemia

Candidate information

You are the doctor in a general medical clinic. Mr Arthur Evans is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Arthur Evans, aged 84**
>
> Thank you for seeing Mr Evans who was noticed to be pale by his carers. He has been in the residential home for 2 years since the death of his wife. He is normally mobile with a stick. A full blood count shows: Hb 6.3 g/dL, WCC 5.8×10^9/L, platelets 213×10^9/L and MCV 112 fL. He does not normally complain of any symptoms but the carer has noticed a decline in activity levels over the last year. He also has arthritis of the right hip for which he takes paracetamol.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Evans is an 84-year-old retired machine operator who does not complain of any symptoms but recently has been noticed to be very pale by the residential home carers. He has been in the home for 2 years since the death of his wife. Normally he is mobile with a stick, has no obvious symptoms of dementia, is self-caring and takes an active role in the daily activities at the home. However, over the last year his activity has reduced with increasing tiredness, particularly towards the end of the afternoon, and there has been a tendency to retire to bed early in the evening. Closer questioning reveals that he has lost about 4 kg in weight, his appetite has diminished over the last few months and he has mentioned to the carer that he has a sore mouth. He does not complain of vomiting, dysphagia, abdominal pain, diarrhoea or gastrointestinal bleeding. There are no cardiovascular, respiratory, hypothyroid or neurological symptoms such as limb weakness or numbness. His past medical history includes arthritis of the right hip that does restrict his movement and for which he needs a stick. He has never been referred to an orthopaedic surgeon. He has no past history of liver disorders, alcohol problems, autoimmune disorders such as Graves' disease or Hashimoto's thyroiditis, thyrotoxicosis, idiopathic adrenocortical insufficiency, vitiligo or hypoparathyroidism, or of any GI disorders or previous

operations. There is no family history of any of the above mentioned autoimmune conditions either. He eats a normal diet supplied by the home that includes meat, vegetables and fruit. His only medication is paracetamol. He used to smoke five cigarettes a day until 12 years ago and he does not drink alcohol. Although he does not have any concerns about his condition, Mr Evans is aware that the residential home staff have expressed their concern about the pallor.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how the patient has deteriorated with regard to activity at the home
- a description of any tiredness, dyspnoea, weight loss or poor appetite
- his premorbid state, especially mobility, self-caring abilities and dementia
- a full gastrointestinal history, especially loss of weight – how much? Suggestions of small bowel disease, e.g. steatorrhoea (ileal disease, bacterial overgrowth), jaundice, a sore tongue (glossitis) in pernicious anaemia
- a dietary history – ?strict vegetarian
- full systemic history to identify heart failure, vitamin B12 deficiency-related subacute combined degeneration (any paraesthesia?), autoimmune disease
- past medical history, especially of GI surgery (gastrectomy, ileal resection), GI disease (coeliac disease, Crohn's disease, bacterial overgrowth, tropical sprue), malignancy, renal dialysis (folate)
- full drug history, especially antifolate drugs such as phenytoin, methotrexate, trimethoprim
- family history of autoimmune disorders, including pernicious anaemia
- alcohol history (folate deficiency)
- fish tapeworm (very rare)
- the concerns of the patient and his carers.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assemble a list of the possible causes of the megaloblastic anaemia
- have a plan of investigations
- explain to the patient that he has an anaemia and that the symptoms of weight loss, poor appetite and tiredness are most likely to be related to this
- address any concerns that he, the carers and the GP may have
- arrange follow-up.

3. Discussion related to the case

- The main problem is the macrocytic anaemia and the consultation needs to address finding a cause for this, i.e. megaloblastic versus non-megaloblastic.
- This case tests the candidate's ability to assimilate a list of differential diagnoses from the information given by the GP and to take an appropriate history. Essentially, this patient describes an insidious illness manifesting with tiredness, loss of weight and appetite and with a sore mouth suggesting a glossitis; these point to a diagnosis of pernicious anaemia.
- Causes of macrocytic anaemia are megaloblastic (bone marrow contains erythroblasts with delayed nuclear maturation) such as B12 or folate deficiency, or non-megaloblastic, e.g. hypothyroidism, alcohol excess, liver disease, reticulocytosis or drug induced. A mean cell volume (MCV) of over 110 fL is more suggestive of megaloblastic than non-megaloblastic anaemia. Pernicious anaemia is common in the elderly and is characterized by atrophy of the gastric mucosa with consequent failure of intrinsic factor production, leading to vitamin B12 malabsorption.
- Investigations should include vitamin B12 and folate levels (values less than 100 ng/L and 4 µg/L are highly suggestive of B12 and folate deficiencies respectively), LFTs looking for a raised bilirubin, parietal cell antibodies (present in 90% of patients) and intrinsic factor antibodies (found in 50% of patients but specific for pernicious anaemia) and, if there are any doubts, a bone marrow examination. A Schilling test may be performed to delineate the cause of B12 deficiency, i.e. pernicious anaemia, or terminal ileal disease or bacterial overgrowth. Further small bowel investigations are only relevant if small bowel disease is suspected.
- Treatment of vitamin B12 deficiency is with hydroxycobalamin 1000 µg intramuscularly every week for 4

weeks and then 1000μg intramuscularly every 3 months for life. If any GI symptoms persist then endoscopy should be considered as gastric carcinoma has twice the normal incidence in pernicious anaemia as in the normal population.

Comments on the case

This case tests the ability of the candidate to evaluate the results given in the letter. This is a typical case where the candidate must know the causes of a macrocytic anaemia. If not, the history taking will be insufficient to score points.

Case 31 | Neck lump

Candidate information

You are the doctor in a general medical clinic. Mr Abdul Hussein is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Abdul Hussein, aged 41**
>
> Thank you for seeing Mr Hussein who presents with a firm nodule on the right side of his neck of 3 months duration. He seems otherwise well and a recent chest X-ray was reported as normal. There is no tuberculosis in the family and he has no significant past medical history apart from *Plasmodium vivax* malaria 2 years ago. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Hussein is a 41-year-old Bangladeshi man who came to the UK 4 years ago. Since then he has worked as a waiter but back in Bangladesh he was a shop assistant. He first noticed a lump in his neck 3 months ago when he was washing. It is situated on the right side of the neck, is firm and has not changed in size. He thinks he has also felt another lump on the right side but towards the back of the neck. The lumps are not tender. There have been no symptoms of cough, sputum, haemoptysis, fever, malaise, pruritus, diarrhoea, weight loss or rash. He feels tired but puts this down to working late nights. There has been no recent history of a sore throat or tonsillitis. There is no family history of tuberculosis, including in the family back in Bangladesh. He smokes up to 10 cigarettes a day, does not drink alcohol and lives with his wife and three children who are all fit and well.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- where the glands are and if he has noticed any other glands
- when the gland was first noticed and how
- if the gland is increasing or fluctuating in size
- if the gland is hard, soft, non-tender or tender
- if he has a history of tuberculosis or recurrent sore throat or tonsillitis
- any past history of head and neck cancer
- if there has been any recent family history of sore throats, viral illnesses, tuberculosis

- other associated symptoms of cough, sputum, haemoptysis, fever, fatigue, pruritus, malaise, diarrhoea, weight loss, rash or eye problems (sarcoidosis)
- occupational history and contacts at work
- family history and well-being of present family
- smoking history
- concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- develop a list of differential diagnoses (the most likely diagnosis in this case is tuberculous lymphadenitis)
- discuss the possibility of tuberculosis (TB) with the patient
- arrange investigations
- discuss the need for a fine needle aspiration and, if a dry tap, excision biopsy for cytology and microscopy and culture for acid- and alcohol-fast bacilli (surgical referral)
- have an idea about the family members with regard to possible contact tracing if tuberculous lymphadenitis is confirmed
- reassure the patient that in the absence of an abnormal chest X-ray and respiratory symptoms, the patient's chance of being infectious is very low.

3. Discussion related to the case

- This case tests the candidate's ability to determine the probable cause of an enlarged lymph node. The possible diagnoses are (a) TB lymphadenitis (most likely in this case despite a normal chest X-ray), (b) metastatic lymph node from a head and neck neoplasm, (c) non-specific viral (doubtful in the absence of a sore throat and persistence of the nodule for 3 months) or infectious mononucleosis or cytomegalovirus, (d) lymphoproliferative disorder (watch out for weight loss and fever), (e) sarcoidosis (watch out for eye and joint symptoms) and (f) HIV lymphadenopathy (a never-to-be-forgotten contender). TB lymphadenitis is a common presentation of Mycobacteria, particularly in patients from South Asia and not necessarily associated with an abnormal chest X-ray. The patient may be feeling well but, despite this, full investigation including a fine needle or excision biopsy is imperative to make a firm diagnosis.
- A Heaf test may be considered but is not confirmatory and the investigation of choice is a biopsy looking for Mycobacteria bacilli and caseating granulomas. Commonly the fine needle aspirate is non-yielding and a complete excision biopsy by the surgeon is necessary (tell the surgeon to send part of the node to microbiology in normal saline and not formalin). The histology sample can go in formalin. A raised ACE level in the presence of non-caseating granulomas would support sarcoidosis but the chest X-ray is commonly abnormal. An abnormal chest X-ray such as hilar lymphadenopathy, with fever and loss of weight, may indicate a lymphoproliferative disorder.
- Recently the development of interferon-gamma release assays (known as T spot test) have been able to measure host immune response against mycobacteria, which can reveal the presence of infection with *Mycobacterium tuberculosis* and detecting 'latent' TB. It has the advantage of being quick (results within a day) and less influenced by previous BCG vaccination.
- The candidate may be asked about the other presentations of tuberculosis, treatment of tuberculosis including the side-effects, multidrug resistance, length of treatment, contact tracing and prevention.

Comments on the case

This is a common case and tests the candidate's ability to make decisions. The node has been present for 3 months and hence a biopsy is warranted.

Case 32 | Painful shins

Candidate information

You are the doctor in a general medical clinic. Mrs Doreen Fredericks has been referred to you by her GP.
Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mrs Doreen Fredericks, age 43**
>
> Thank you for seeing Mrs Fredericks who has been suffering from painful, red, raised lesions on her shins for the last 2 weeks which have been accompanied by malaise. She is otherwise well although I treated her with a course of amoxicillin 1 month ago for a bout of bronchitis. She smokes 15 cigarettes a day.
>
> Your sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Fredericks is a 43-year-old healthcare assistant who works at a residential home. She has had painful, red, raised lesions on both shins for the last 2 weeks. She has felt unwell with malaise and has been off work for the last week. She does not have a fever, arthralgia, loss of weight, any eye complaints, sore throats, bowel symptoms or other skin rashes. One month ago, she had a bout of bronchitis manifesting as cough and purulent sputum for which she had a 7-day course of amoxicillin. She has had a persistent cough with occasional mucoid sputum for the last 6 months but her GP has suggested that this is most likely due to her smoking. She smokes 15 cigarettes a day. She has an unremarkable past medical history and takes no medication apart from the oral contraceptive pill. She lives with her husband and two teenage children who are all well. She has not been abroad for over 15 years.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the features of the skins lesion, i.e. site, shape, size, colour, raised or flat, painful or painless, any deterioration or improvement, relieving or aggravating factors
- other systemic symptoms, e.g. malaise, fever, arthralgia, loss of weight, cough, sputum, haemoptysis, gastrointestinal symptoms
- other symptoms particularly suggestive of sarcoidosis, streptococcal infection, tuberculosis and inflammatory bowel disease
- the details of the recent bout of bronchitis

- any recent history suggestive of infection, e.g. fungal, atypical organisms
- the history of the recent course of antibiotics
- other drug history, especially the oral contraceptive pill
- any travel abroad and any exposure to atypical organisms and tropical infectious agents
- the impact of the painful skin lesions on her life and work
- the concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- confirm a history suggestive of erythema nodosum
- explore the possible aetiology from the history
- explain the possible diagnosis to the patient
- detail the investigations to be carried out.

3. Discussion related to the case

- Erythema nodosum presents as painful, tender, dusky blue-red nodules, commonly over the lower limbs or shins, which may fade over a couple of weeks leaving a bruised appearance. It is common in young adults, particularly women, and can be associated with arthralgia, malaise and fever. Inflammation occurs in the dermis and the subcutaneous layer (panniculitis).
- Streptococcal infections and sarcoidosis (accompanied with bilateral hilar lymphadenopathy) are the most common causes in adults. In children, erythema nodosum is most commonly caused by upper respiratory tract infections, especially from streptococci. Less common causes (except in endemic areas) include tuberculosis, mycoplasma, leprosy, coccidioidomycosis, histoplasmosis, psittacosis, lymphogranuloma venereum and ulcerative colitis. The condition can also be a reaction to drugs (sulphonamides, iodides, bromides, oral contraceptives). In some cases, no cause may be found.
- Investigations should include a chest X-ray, ESR, ACE level, throat swab if streptococcal sore throat is suspected and a search for an infective organism, e.g. mycoplasma serology, sputum for *Mycobacterium*.
- Treatment is symptomatic with non-steroidal anti-inflammatory drugs and bedrest. Oral steroids are sometimes necessary and stopping the oral contraceptive pill may need to be considered in this case.

Comments on the case

This case tests the candidate's ability to develop a list of differential diagnoses and to tailor the history towards finding a cause for the patient's symptoms. The history of the cough must be detailed to determine if the patient is describing possible sarcoidosis or tuberculosis. It is possible that no cause will be found.

Case 33 | Painful shoulders

Candidate information

You are the doctor in the general medical clinic. Mr Alfred Swindon has been referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Alfred Swindon, aged 71**
>
> Thank you for seeing Mr Swindon who has been suffering for the last 4 weeks with painful shoulders and a stiff neck. I have treated him with diclofenac but with no success. I am worried that he may have cervical myelopathy.
>
> Please see and advise.
>
> Your sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Alfred Swindon is a 71-year-old retired shopkeeper who has been suffering from painful, stiff shoulders and neck for the last 4 weeks. These symptoms appeared suddenly and are worse in the mornings, lasting up to 2–3 h. He does not have any stiffness or pain in the lumbar spine or hips. Other associated features include tiredness, fever, weight loss and a feeling of low mood. He does not have any weakness of his limbs and no restriction of head movements once the neck stiffness is relieved. He is otherwise well and has no respiratory, cardiovascular or gastrointestinal symptoms. He does not have any other neurological symptoms such as dizziness, blurred vision, tinnitus, headache, scalp tenderness, claudication of the jaw or tender temporal or occipital arteries. He is on no medication and used to smoke 10 cigarettes a day up to 30 years ago. He has an occasional glass of wine in the evenings and lives with his wife.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the history of the painful stiff shoulders and neck (suggesting polymyalgia rheumatica), including time of onset, the limbs affected, any variation of severity during the day, the duration of symptoms and any proximal muscle weakness (polymyositis if proximal pain is present or myopathy if pain and stiffness are absent)
- any associated systemic features such as tiredness, fever, weight loss or depression

- any suggestion of giant cell arteritis, e.g. painless loss of vision, severe headache, tenderness of the scalp, jaw claudication when eating, tenderness over the temporal and/or occipital arteries
- any other neurological symptoms
- symptoms suggestive of rheumatoid arthritis, e.g. symmetrical arthropathy in both hands, etc.
- any symptoms suggestive of cervical myelopathy, e.g. head movement restriction, pain along the distribution of the dermatomes in the arms, wasting of the small muscles of the hand
- symptoms suggestive of hypothyroidism
- past medical history
- the drug history
- the impact of the illness on the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- identify the symptoms clearly and to differentiate the three main possibilities: polymyalgia rheumatica, polymyositis and myopathy
- detail a list of investigations
- explain the possible cause for his symptoms and outline a management plan.

3. Discussion related to the case

- Polymyalgia rheumatica (PMR) is an inflammatory rheumatic condition which is part of the same disease spectrum as giant cell arteritis (GCA) – around 15–30% of patients with PMR go on to develop the latter. Both conditions are associated with specific alleles of the HLA-DR4 gene and histological studies show mild synovitis and subclinical arterial inflammation (more prominent in GCA). PMR usually occurs in patients over 50 years old and the female/male ratio is 2/1.
- The onset may be acute or subacute. PMR is characterized by severe pain and stiffness of the neck, pectoral and pelvic girdles, morning stiffness, stiffness after inactivity and systemic complaints such as malaise, fever, depression and weight loss (cachectic PMR may mimic cancer). There is no selective muscle weakness or evidence of muscle disease on electromyography (EMG) or biopsy. A normochromic normocytic anaemia may be present. In most patients, the ESR is dramatically elevated, often >100 mm/h. C-reactive protein levels are usually elevated and may be a more sensitive marker of disease activity in certain patients.
- Polymyalgia rheumatica is distinguished from rheumatoid arthritis by the usual absence of small joint synovitis (although some joint swelling may be present), erosive or destructive disease, rheumatoid factor or rheumatoid nodules. PMR is differentiated from polymyositis by finding normal muscle enzymes, EMG and muscle biopsy and by the prominence of pain over weakness. Hypothyroidism can present as myalgia with abnormal thyroid function tests and an elevated creatine kinase (CK). PMR is differentiated from myeloma by the absence of a monoclonal gammopathy and from fibromyalgia by the systemic features and the elevated ESR.
- Corticosteroids produce a reduction in the symptoms within 48 h of starting treatment. This should reduce the risk of developing GCA. Non-steroidal anti-inflammatory drugs are less effective and should be avoided. PMR usually responds dramatically to prednisolone initiated at around 15 mg od. If temporal arteritis is suspected, treatment should be started immediately with 60 mg od to prevent blindness. As the symptoms subside, corticosteroids are tapered to the lowest effective dose, regardless of the ESR. Some patients are able to discontinue corticosteroids within 2 years whereas others require small amounts for years. Prevention of corticosteroid-induced bone loss using bisphosphonates should also be considered.

Comments on the case

This case tests the candidate's ability to clearly ascertain the history of painful stiff shoulders and to differentiate the diagnosis of polymyalgia rheumatica from polymyositis and myopathy. The GP wondered if the patient had cervical myelopathy but the history should be able to rule this out.

Case 34 | Palpitations

Candidate information

You are the doctor in a cardiology clinic. Mr Colin Jeffreys is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Colin Jeffreys, aged 78

Thank you for seeing Mr Jeffreys who is normally a fit and healthy man. However, he had an attack of palpitations and dizziness whilst on the golf course 2 weeks ago. I would be grateful if you could rule out any serious cardiac disease. He takes salbutamol for mild, late-onset asthma. He also had a transient ischaemic attack 5 years ago and he takes aspirin for this. He was in sinus rhythm today and his BP was 130/68 mmHg. His recent FBC, U&E and TFT were all normal. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Colin Jeffreys is a 78-year-old former city councillor who had one episode of palpitations 2 weeks ago when teeing off at the local golf course. The palpitations came on suddenly, lasted for around 5 min and then abruptly disappeared. He remembers that the palpitations were rapid and regular with no missed beats, and there was a feeling of heaviness in his chest, with dyspnoea and faintness, and he felt extremely ill. Once back home, he felt exhausted for the rest of the day. He visited the GP the next day at which point the referral to the cardiology clinic was made. Currently he feels fine, with no obvious irregular heartbeats. He has had no more chest pain, dyspnoea or any symptoms of hyperthyroidism (such as anxiety, tremor, loss of weight or increased appetite). There were no previous episodes of palpitations or chest pains and he has no symptoms suggestive of an anxiety-depressive neurosis. His asthma is stable with no nocturnal symptoms and he only uses his salbutamol inhaler once a day (he does not have a tremor or any other side-effects from the inhaler). He does not take any other inhalers such as long-acting β2-agonists. He had a transient ischaemic attack 5 years ago which presented as weakness of his right hand but this subsided after 1 h. He had no palpitations then. He was started on

aspirin and has had no similar events since. There is no past history of ischaemic heart disease, hypertension, diabetes mellitus or hypercholesterolaemia. He stopped smoking 23 years ago when he used to smoke 10 cigarettes a day. He has a glass of sherry in the evenings but no more. He does not drink tea or coffee and takes no other drugs. He lives alone in a three-bedroom house and has no family. His main concerns are that his GP has told him to stop playing golf until investigations have revealed a cause for his recent illness.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how long ago the palpitations occurred and what the patient was doing at the time
- any previous history of palpitations
- if they started and stopped abruptly (supraventricular tachycardia, SVT) and how long they lasted for
- how fast did the heart race. Ask the patient to tap it out on the desk
- did the patient take his own pulse at the time of the palpitations? If so, how fast was the pulse rate? Was the pulse regular or irregular? If the patient did not take his own pulse, did he feel any thumping in his chest? If so, how fast and how regular was the thumping? Was there a missed beat and if so did the next one feel heavier?
- whether he presently has any palpitations or irregular heartbeats
- any other associated symptoms such as chest pain, dyspnoea, faintness, anxiety, tremor, recent loss of weight and increased appetite (hyperthyroidism)
- a drug history, e.g. sympathomimetics or salbutamol tablets. How often does he use the salbutamol inhaler? Does he also use a long-acting β2-agonist inhaler?
- details of alcohol, caffeine and tobacco consumption. Has he taken illicit drugs or herbal remedies?
- details of the TIA. Did he have a rhythm problem, e.g. atrial fibrillation (AF), at that time?
- any previous history of heart disease, hypertension, thyroid disorders
- any symptoms of anxiety and depressive disorders
- any concerns that the patient may have.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- explain the possible differential diagnoses
- arrange a set of investigations
- promise the patient that all the tests will be done as soon as possible.

3. Discussion related to the case

- This case tests the ability of the candidate to (a) decide if the palpitations are related to ischaemic heart disease or due to a non-cardiac cause (other causes of palpitations in the clinic situation, particularly in young people, are caffeine/tobacco induced, anxiety disorder and occasionally thyrotoxicosis), (b) aim to decide if the palpitations were regular (SVT, AF, 2:1 block) or irregular (AF, variable block).
- The most likely cause of the palpitations in this case would be related to ischaemic heart disease and sinoatrial disease and investigations would be tailored towards this (GP has said TFT are normal). This would include glucose, cholesterol, resting ECG, chest X-ray, echocardiogram and a 24-h ECG.
- The examiners will expect the candidate to be able to discuss (a) the management of paroxysmal atrial fibrillation including issues of anticoagulation and (b) the acute management of narrow complex and broad complex dysrhythmias.

Comments on the case

This is a typical case where the patient is presently asymptomatic and the emphasis is on taking a detailed history to work out exactly what rhythm the palpitations characterize – a 24-h ECG will probably show 'sinus rhythm with a few ventricular ectopics'. Tapping out the palpitations is a good way of determining rate, rhythm and mode of onset and cessation. Do not expect the patient to have measured his own pulse when he felt ill.

Case 35 | Personality change

Candidate information

You are the doctor in a liver clinic. Mr Matthew Hayward is referred to you by his GP. He is accompanied by the wife (whom you will be speaking with during the consultation).

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Matthew Hayward, aged 42

Thank you for seeing Mr Hayward earlier than usual. You see him regularly for Wilson's disease of the liver. Over the last 4 weeks he has been irritable with bouts of anger directed towards his wife for no obvious reason, together with odd sleeping patterns. Compared to the previous investigations, his liver function tests, clotting and albumin have deteriorated.

Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Hayward, a 42-year-old unemployed man, first presented 7 years ago with a tremor and abnormal liver function tests. Further investigations confirmed Wilson's disease and slit lamp examination of the eyes showed Kayser–Fleischer rings. Since then he has been reasonably well although his tremor has persisted. He was initially started on penicillamine but developed a rash and fever and was switched over to trientine. Over the last 4 weeks his wife has noticed him to be more irritable, with poor concentration, confusion, bursts of temper and sleeping during the day but not at night. These symptoms are variable, with good and bad days. She has not noticed him to be obviously jaundiced but he has been complaining of tiredness and nausea with a poor appetite. There have been no convulsions, loss of weight, constipation or any obvious abdominal swelling suggestive of ascites and no GI bleeding. His diet has not changed although he is probably not eating as much, nor is he on any other medication. There is no history of taking benzodiazepines or any illicit drugs which may cause hepatic damage. He does drink alcohol, usually about 6 pints of beer during the week, but there has been no sudden increase in alcohol consumption. His compliance with trientine has been patchy due to occasional drug-induced nausea.

He does not smoke and has not been abroad recently. There are no other risks factors for concomitant viral hepatic infections. Mrs Hayward is particularly concerned about the personality change as his current behaviour is certainly out of character for him.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the history of the Wilson's disease, i.e. presentation (neurological, hepatic and occular), diagnosis (serum and urinary copper with caeruloplasmin and liver biopsy), treatment, treatment changes, side-effects to treatment
- present history of behavioural and psychiatric changes and the effect of this on the wife, e.g. personality, mood, tempers, sleep pattern, poor concentration, irritability, confusion, disorientation, slurred speech, self-care
- other liver disease symptoms and signs, e.g. jaundice, ascites, ankle swelling, bruising, itching, urine changes, weight loss, convulsions, nausea and vomiting
- factors suggesting reasons for possible precipitation of portosystemic encephalopathy, e.g. high protein diet/poor nutrition, GI haemorrhages, alcohol, constipation, infection (peritonitis), drug induced, e.g. benzodiazepines or illicit drugs, development of hepatocellular carcinoma, or worsening cirrhosis. Other causes include electrolyte imbalance, e.g. hypokalaemia or hyponatraemia (?diuretic usage)
- any suggestions of other hepatic disease on top of Wilson's disease, e.g. viral hepatitis
- poor compliance with medication and if so why
- social and psychological impact on the family.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- obtain a history of the Wilson's disease
- obtain a history of the present symptoms suggestive of portosystemic encephalopathy
- determine possible triggers for the encephalopathy, especially poor drug compliance
- provide a plan of investigations and management, including admission to hospital
- explain the possible causes for the deterioration.

3. Discussion related to the case

- Hepatic (or portosystemic) encephalopathy refers to a chronic neuropsychiatric syndrome secondary to liver cirrhosis presenting as a fluctuating disorder of personality, intellect, mood and reversal of normal sleep pattern. Other features include nausea, vomiting and weakness. The most important factors in the pathogenesis are severe hepatocellular dysfunction and/or intrahepatic and extrahepatic shunting of portal venous blood into the systemic circulation so that the liver is largely bypassed. As a result of these processes, various toxic substances absorbed from the intestine are not detoxified by the liver and lead to metabolic abnormalities in the central nervous system (CNS).
- Aside from the build-up of metabolic toxins (e.g. ammonia), cerebral function may also be impaired by altered transmission of neurochemicals (such as an increase in γ-amino butyric acid [GABA]-mediated inhibition) and decreased cerebral glucose metabolism.
- Factors precipitating portosystemic encephalopathy include those mentioned above. Signs include a coarse flapping tremor, constructional apraxia and decreased mental function. Investigations include routine biochemistry, clotting and haematology and an EEG which will show triphasic slow waves.
- A number of conditions can mimic the clinical features of hepatic encephalopathy. These include acute alcohol intoxication, sedative overdose, delirium tremens, Wernicke's encephalopathy, Korsakoff's psychosis, subdural haematoma, meningitis and hypoglycaemia. Other metabolic encephalopathies must also be considered, especially in patients with alcoholic cirrhosis.
- Basic management includes identification and removal of the precipitant, protein restriction and intestinal purgation with lactulose (aiming for increased frequency of motions, at least four a day).
- The neurological manifestations of Wilson's disease include both resting and intention tremors, spasticity, rigidity, chorea, drooling, dysphagia and dysarthria. Psychiatric disturbances are present in most patients

with neurological symptoms. Schizophrenia, manic-depressive psychoses and the classic neuroses may occur, but the most common disturbances are bizarre behavioural patterns that defy classification. Improvement in the psychiatric state can occur with pharmacological reduction of the copper excess, but psychotherapy may be required.

- The treatment of Wilson's disease consists of removing and detoxifying the deposits of copper as rapidly as possible, and must be instituted once the diagnosis is secure, whether the patient is ill or asymptomatic. Penicillamine, which functions as a copper chelator and increases urinary excretion of copper, is administered orally in an initial dose of 1 g daily in single or divided doses. Because penicillamine has an anti-pyridoxine effect, 25 mg/day of pyridoxine is also given. In nearly 10% of patients, sensitivity to penicillamine develops early. White blood cell (WBC) and platelet counts should be assessed and urinalysis performed several times during the first month of treatment. Penicillamine should be discontinued and replaced by trientine if rash, fever, leucopenia, thrombocytopenia, lymphadenopathy or proteinuria develops or if neurological worsening accompanies the institution of penicillamine and persists for a week or more. Treatment must be continued for life. Trientine is not recommended as long-term therapy. It is possible to restart penicillamine after a period of cessation. The symptoms may not recur if oral prednisolone is given before restarting penicillamine. Inadequate treatment, or interruption of therapy, can be fatal or cause irreversible relapse.
- Zinc acetate is a useful adjunct for maintenance therapy of Wilson's disease and works by decreasing enteric absorption of copper. It accomplishes this by inducing intestinal cell metallothionein, which binds copper and prevents its transfer into the blood. Because zinc is essentially non-toxic and the other two agents do have toxic side-effects, zinc may be better tolerated. However, the American Association for the Study of Liver Diseases still recommends penicillamine or trientine as first-line treatment and zinc to be used in patients who (a) cannot tolerate the above drugs or (b) are in the presymptomatic or maintenance phase. Zinc must not be given with penicillamine or trientine as both these agents chelate zinc.
- Patients with acute liver failure or decompensated liver cirrhosis due to Wilson's disease should be assessed for liver transplantation.

Comments on the case

This case tests the ability of the candidate to detect a precipitant for the portosystemic encephalopathy and in this case compliance with taking drugs is an important factor.

Case 36 | Pins and needles

Candidate information

You are the doctor in a neurology clinic. Mr Leonard Willis is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Leonard Willis, aged 64

Thank you for seeing Mr Willis who still works part-time as a gardener. He gives a 2-month history of pins and needles in both hands. He has a past history of hypercholesterolaemia for which he takes simvastatin 20 mg. His last cholesterol level was 4.8 mmol/L. Other previous history includes an inguinal hernia repair 14 years ago. He also takes aspirin 75 mg od. His BM glucose recorded in the surgery today was 5.0 mmol/L.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Willis is a 64-year-old part-time gardener who has been complaining for the last 2 months of pins and needles with pain, tingling and numbness in both hands. He is right-handed and the pain first appeared in that hand which was soon followed by pain in the left. The symptoms are worse particularly in the thumb, index and middle finger but they do sometimes affect the whole hand. The symptoms are now occurring at night, causing sleep disruption. Shaking the hands sometimes helps but in the mornings his hands feel clumsy and swollen although later in the day the symptoms are better. He does not have similar symptoms in the feet or arms and he does not complain of any burning sensation in the feet. There are no other neurological symptoms such as weakness in the limbs, tremor, headache, blurred vision, muscle wasting, dysphasia or dysphagia. He has no other respiratory, cardiovascular or abdominal symptoms. His past history includes hypercholesterolaemia (cholesterol 8.0 mmol/L), for which he takes simvastatin 20 mg od, and an inguinal hernia repair 14 years ago. The latest cholesterol measurement last year was 4.8 mmol/L. He has no history of ischaemic heart disease, cerebrovascular disease, peripheral vascular disease, diabetes mellitus, trauma or renal disease. He has never smoked and only drinks one bottle of beer a day at home. He has a normal diet and does not take any other medication except for aspirin. He works with another gardener, usually doing

weekly contract jobs. He has noticed that during one job last week, where he had to use a stone cutter to take down an old coal shed, his symptoms immediately returned and persisted for much longer during that day and night. He has not suffered from any cuts or injuries to his hands during his work. He lives with his wife and his main concerns are that his job is being affected by the symptoms.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the time-length of the symptoms and whether they are deteriorating
- if the patient is left- or right-handed
- which hand had the symptoms first and which part of the hand is affected, including which fingers. Are the feet affected as well?
- what are the exact symptoms, i.e. pain, burning sensation, numbness, weakness, clumsiness, feeling of heaviness or tingling
- other neurological symptoms, especially weakness, paraesthesia, tremor or muscle wasting
- other cardiovascular, respiratory and abdominal symptoms, looking for the possibility of cancer, vascular disease and diabetes mellitus
- any previous trauma
- a full drug history, including enquiry about drugs which may cause peripheral neuropathy, especially isoniazid, nitrofurantoin
- a full alcohol history
- dietary history (vitamin B1, B6 and B12 deficiencies)
- metabolic history, especially osmotic symptoms suggestive of diabetes mellitus, renal failure, thyrotoxicosis
- positive hereditary history of neuropathies such as hereditary motor and sensory neuropathy
- causes of carpal tunnel syndrome, e.g. obesity, arthritis, previous fractures of wrists, repetitive strain injury, e.g. vibrating tools (stone cutter), hypothyroidism, acromegaly, pregnancy
- any concerns that the patient has.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assimilate a list of differential diagnoses
- explain these diagnoses to the patient
- have a plan of investigations
- arrange follow-up to discuss the investigations.

3. Discussion related to the case

- This case tests the ability of the candidate to differentiate carpal tunnel syndrome from one of the many causes of peripheral neuropathy (diabetes mellitus, neoplasia, drugs, alcohol or idiopathic).
- The case presents with the typical features of carpal tunnel syndrome which tend to affect mainly the dominant hand. In this case, the vibrating tool exacerbates the symptoms. For diagnosis and confirmation, nerve conduction studies should be performed which will show a reduced or absent median sensory nerve action potential (SNAP) from the index finger and prolongation of the latency. EMG may show denervation of the abductor pollicis brevis.
- Treatment may include night-time splints, local steroid injections (temporary relief) and, if necessary, surgical decompression.
- The examiners would expect the candidate to be able to discuss the differential diagnoses for a peripheral neuropathy.

Comments on the case

This case again demonstrates the importance of taking a detailed history in order to provide the probable diagnosis and distinguish this entrapment neuropathy from a peripheral neuropathy.

Case 37 | Polyuria

Candidate information

You are the doctor in a general medical clinic. Mrs Janet Abrahams is referred to you by her GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Janet Abrahams, aged 42

Mrs Abrahams gives a 2-week history of polyuria, feeling unwell and being generally tired. Four months ago she had a bout of flu followed by acute bronchitis. The cough has persisted despite three courses of antibiotics. Her recent blood glucose test done at the clinic was 5.8 mmol/L. A chest X-ray is reported as showing 'numerous pulmonary infiltrates and bilateral hilar lymphadenopathy. Please refer to a physician'.

Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Janet Abrahams is a 42-year-old accountant who presents with a 2-week history of polyuria and thirst. The symptoms came on suddenly over 2 days and she now passes copious amounts of urine daily (volume exceeds 4 L), including during the night. She says she has to pass urine about every 15 min and it is very dilute. In response to this, she has to drink an equivalent amount of liquid (especially cold fluids) during the day. Associated with this is a cough which first presented 4 months ago after a bout of flu. Despite three courses of antibiotics, the cough persists and is non-productive with no wheeze, sputum or haemoptysis. She feels tired with generalized aches in her body. She has no chest pains, feeling of faintness, palpitations, GI, arthritic or eye symptoms. She has not noticed a change in her periods or her weight. The past medical history includes an appendicectomy when she was 6 years old but no recent head trauma or neurosurgery. Presently she takes no medication and she finished her last course of antibiotics 6 weeks ago. She has never taken corticosteroids. She does not smoke or drink alcohol. She has no psychiatric history. There is no family history of note such as diabetes mellitus or asthma. She lives with her husband and two children who are all well. She has now stopped working as it was impossible to do her work whilst having polydipsia and polyuria. She is obviously concerned about her symptoms.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a chronological history of the events
- the onset, volume of urine passed, frequency of micturition (day and night) and volume of fluid intake (type of fluids, e.g. cold drinks), colour of urine
- appetite, weight, cough history (dry or with sputum and haemoptysis, worse in the mornings with wheeze), any associated heartburn and sinusitis. Precipitating factors such as common household pathogens
- other general symptoms which may suggest a cause for the polyuria, e.g. diabetes mellitus (osmotic) or cranial diabetes insipidus, e.g. tumours (primary craniopharyngioma, ependymoma, hypothalamic pituitary glioma, lung and breast metastases), infections (tuberculosis, meningitis, cerebral abscess), infiltrations (sarcoidosis, Langerhans cell histiocytosis), postsurgical (transfrontal or trans-sphenoidal), postradiotherapy, vascular (haemorrhage or thrombosis, aneurysm), and head trauma, or nephrogenic diabetes insipidus, e.g. drug induced (lithium, glibenclamide), metabolic (hypokalaemia, hypercalcaemia), familial, renal tubular acidosis
- symptoms suggestive of pituitary dysfunction, e.g. galactorrhoea, amenorrhoea, hypogonadism, visual field defects, hypothyroidism, hypoadrenalism
- psychiatric history (compulsive water drinking)
- full drug history
- relevant past history, e.g. head trauma, head neurosurgery
- smoking and alcohol history
- impact of symptoms on family and work
- the concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- have a complete list of possible differential diagnoses
- explain the chest X-ray findings and to suggest the possibility of sarcoidosis as the cause for the patient's symptoms
- explain what sarcoidosis is
- explain the need to admit for further investigations
- explain the investigations in detail.

3. Discussion related to the case

- This case tests the ability of the candidate to differentiate the possible causes of polyuria and polydipsia. The differentials are stated above. The most likely cause is sarcoidosis with pituitary involvement.
- Initial investigations are biochemistry, including osmolalities of blood and urine, ACE, MRI scan of the head and bronchoscopy with a transbronchial biopsy to confirm a tissue diagnosis of non-caseating granuloma. In this case there is no need to do water-restricting investigations.
- The diagnosis may be made on early-morning paired plasma and urine osmolalities but, if these are normal, a water deprivation test will need to be undertaken. The principle of this test is to withhold fluids while monitoring plasma and urinary osmolalities. If the patient loses more than 3% of the total body weight on hourly measurements during the test and the serum osmolality is >300 mOsm/kg, it should be stopped and a dose of desmopressin given and the patient allowed to drink. Otherwise monitoring is continued by plasma and urinary osmolalities for 8 h, then desmopressin is given and the patient allowed to drink. A normal response is for the plasma osmolality to remain within the normal range (280–295 mOsm/kg) and the urine/plasma (U/P) osmolality ratio to rise to >2.0.
- In pituitary diabetes insipidus the urine osmolality fails to rise appropriately and the urine volume remains inappropriately high in spite of a rising plasma osmolality. Plasma osmolality rises to >300 mOsm/kg and the U/P ratio remains <2.0 with urine concentration increasing normally after administration of desmopressin.
- The treatment should include intranasal synthetic vasopressin analogue desmopressin (DDVAP) 10–20 µg od or bd or orally 100–200 µg tds. The patient should start on high-dose corticosteroids, e.g. prednisolone 40 mg od, for the sarcoidosis and be tailed down slowly. She should be offered bisphosphonates as well because of the long-term steroids.

Comments on the case

This case highlights the importance of the information given by the GP to enable the candidate to direct the history taking.

Case 38 | Pruritus

Candidate information

You are the doctor in a general medical outpatient clinic. Mrs Shirley Baxter is referred to you by her GP.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Shirley Baxter, aged 52

Thank you for seeing Mrs Baxter who has been complaining of generalized pruritus and increasing fatigue for the last 6 months. I have tried her with lubricant bath oils initially with some soothing effect but now her itch is worse and keeps her awake at night. She is normally fit and well and I enclose the following routine blood results. She takes no regular medication. Please see and advise.

Hb 11.3 g/dL, WCC 6.8 $\times$ 10^9/L , platelets 354 $\times$ 10^9/L, Na 139 mmol/L, K 4.1 mmol/L, urea 3.9 mmol/L, creatinine 74 mmol/L, bilirubin 12 μmol/L, alanine aminotransferace 29 U/L, alkaline phosphatase 290 U/L, albumin 39 g/L, glucose 5.1 mmol/L.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Baxter is a 52-year-old school secretary who has been normally fit and well without any time off work for ill health. However, over the last 6 months she has been complaining of a persistent generalized pruritus. She has tried various bath oils with some initial soothing effect but the itch has now worsened. She finds that the pruritus keeps her awake at night and she has scratched herself to such an extent that her skin is raw and bleeding. Associated with this is a recent feeling of generalized tiredness and she is finding it hard to concentrate at work. There are no other symptoms of loss of weight or appetite, or of cardiovascular, pulmonary or GI origin, including jaundice, bowel habit alteration, haematemesis or PR bleeding or any thyroid and neurological symptoms. No rashes have been seen and her skin looks quite normal except for the scratch marks. There has been no occupational exposure to fibre-glass or to pruritus-provoking recreational or domestic agents. The past medical history includes a Colles' fracture when she was 8 years old. She does not suffer from anxiety or depression. She takes only paracetamol for occasional head-

aches and no herbal remedies. She lives with her husband and has three grown-up children. Her husband is well with no similar itching. She has not been in close contact with anyone else. She does not smoke and only drinks three glasses of wine per week. Her main concerns are about the possible cause for the pruritus and her poor sleeping.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the timing of the pruritus, and whether this is persistent or intermittent, improving or deteriorating, and the extent and severity of her scratching
- which part of the body has the pruritus and which part of her body started first. Do her eyes itch?
- any relieving factors, e.g. bath oils, or provoking factors, e.g. stress, depression, drugs, certain foods
- whether the pruritus affects sleep and work
- whether there are any associated skin rashes, pruritus ani and/or vulvae
- living conditions and contact history, e.g. anyone with scabies
- occupational exposure, e.g. fibre-glass
- systemic symptoms, e.g. tiredness, jaundice (primary biliary cirrhosis, haemochromatosis), fever, weight loss (malignancy, especially lymphoma), osmotic symptoms (diabetes mellitus), thyroid symptoms (hypo- or hyper-), history of chronic renal failure, history of HIV
- drug history, including herbal remedies
- any recreational and domestic agents, e.g. skin creams, biological washing powders
- psychiatric illness, especially anxiety and depression
- alcohol and smoking history
- impact of the pruritus on her and family.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- develop a list of differential diagnoses
- explain the possibilities to the patient
- show that one blood test was slightly abnormal (alkaline phosphatase) and to explain that one cause could be related to the liver
- plan and explain the investigations to be arranged, particularly concentrating on primary biliary cirrhosis
- address the problem of the pruritus with general advice such as avoiding soaps but to tell her that follow-up will be arranged soon with results of further tests.

3. Discussion related to the case

- This case tests the ability of the candidate to work out the possible systemic causes of pruritus. The raised alkaline phosphatase possibly suggests primary biliary cirrhosis that can present with pruritus before the appearance of any jaundice. Other possibilities include diabetes mellitus, hypo- or hyperthyroidism, chronic renal failure, haemochromatosis, polycythaemia, HIV infection, and internal malignancy such as a lymphoma. Topical causes, e.g. washing-up liquid/clothes detergents, drug-induced and psychological histories are, however, still very important.
- Other tests not performed as yet can include thyroid function, lipids, iron studies, autoantibody screen (antimitochondrial antibodies). If autoantibodies are positive then the next step would be an ultrasound of the liver and a liver biopsy.
- The candidate would be expected to discuss the management of pruritus (usually difficult) using cholestyramine (4 g sachet three times per day), and ursodeoxycholate (10–15 mg/kg daily in 2–4 divided doses) in improving liver enzymes and pruritus, prognosis and the role of liver transplantation.

Comments on the case

This case also tests the candidate's ability to read the GP's letter carefully. The finding of an abnormal alkaline phosphatase level should enable the candidate to structure his or her history taking without forgetting the possibilities of other systemic medical causes. The candidate must not forget to ask about other recreational and domestic skin contacts.

Case 39 | Purpuric rash

Candidate information

You are the doctor in a haematology clinic. Mrs Christine Bunch is referred to you by her GP for an urgent assessment.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Christine Bunch, aged 36 years

Thank you for seeing urgently this lady who has presented with a 4-day history of a purpuric rash. I cannot detect any obvious bleeding. Her FBC is as follows: Hb 11.1 g/dL, WCC 8.4 $\times$ 10^9/L, neutrophils 6.7 $\times$ 10^9/L and platelets 20 $\times$ 10^9/L. She is normally fit and well and takes no medication. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Christine Bunch is a normally fit and well 36-year-old lady who works in a florist shop and presents with a 4-day history of a gradual onset of a purpuric, non-blanching rash which started in both hands but now covers both arms and legs. The purpuric spots are flat, bright red, well-circumscribed and varying in size with larger lesions seen particularly on the arms. She feels generally quite well though she has always had a tendency towards bruising. There is no associated epistaxis, bleeding gums, haematuria, lymphadenopathy, fever, weight loss, abdominal pain, arthritic pain or vaginal bleeding. Her last menstrual period (LMP) was 2 weeks ago and her periods do tend to be heavy. There is no recent history of a viral illness or any previous history of purpuric rashes, lymphoproliferative disorders or coagulopathies. She has not taken any medication such as anticoagulants, steroids or antibiotics. Her diet is satisfactory with fresh fruit and vegetables and there has been no recent history of trauma or blood transfusions. She has no HIV risk factors and lives with her husband and one son who are both well. She does not smoke or drink. She is obviously concerned about the rash.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how long the purpura has been present for and if it has occurred before
- what distribution the rash covers
- a description, i.e. size, shape, colour, circumscribed, raised, itchy, blanching
- associated symptoms such as epistaxis, bleeding gums, haematuria, fever, weight loss (?evidence of leukaemia or secondary malignancy), abdominal pain, arthritic pain and vaginal bleeding and menstrual blood loss
- if she has noticed any lymphadenopathy
- relevant past medical history of lymphoproliferative disorders, liver disease or recent viral infections (Epstein–Barr virus [EBV], toxoplasmosis, cytomegalovirus [CMV])
- a family history of bleeding and coagulopathies or collagen disorders, e.g. Ehlers–Danlos or connective tissue disorders such as SLE
- a drug history, especially anticoagulants, steroids, sulphonamides, chloramphenicol
- a dietary history, especially vitamin C
- recent trauma, head injury or blood transfusions
- the concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- formulate a possible list of differential diagnoses
- explain the possibilities to the patient
- explain that it would be ideal to admit for assessment
- have a plan of investigations and include an explanation of the bone marrow biopsy procedure
- explain that you may have to treat with steroids and explain their side-effects.

3. Discussion related to the case

- This case typically describes idiopathic thrombocytopenic purpura (ITP) in a young woman. She does not have any active bleeding. The other possibilities for consideration are bone marrow failure (e.g. leukaemia, infiltration by secondary malignancy), coagulation deficiency (e.g. thrombotic thrombocytopenic purpura, disseminated intravascular coagulation, haemolytic uraemic syndrome), secondary to other autoimmune conditions (e.g. systemic lupus erythematosus, antiphospholipid syndrome), drug induced (e.g. heparin, quinines, sulphonamides, chloramphenicol, steroids), and infection (e.g. EBV, CMV and toxoplasmosis) and others such as Henoch–Schönlein purpura.
- Most adults with ITP have symptoms that persist for many years and it is then referred to as chronic ITP. Women aged 20–40 are afflicted most commonly and outnumber men by a ratio of 3/1. They may present with an abrupt fall in the platelet count with bleeding similar to that of patients with acute ITP. Usually they have a prior history of easy bruising or menorrhagia. These patients have an autoimmune disorder with antibodies directed against target antigens on the glycoprotein IIb-IIIa or glycoprotein Ib-IX complex.
- The only blood count abnormality is the thrombocytopenia. Bone marrow examination reveals normal or increased numbers of megakaryocytes. Platelet antibodies can be looked for but are not reliably specific. Antinuclear antibody testing is useful in looking for SLE. Patients with splenic enlargement and atypical lymphocytes should have EBV serology and HIV should not be overlooked in high-risk patients. Bone marrow examination may be useful, especially in older patients, to rule out myelodysplasia.
- Treatment is aimed at reducing platelet antibodies with corticosteroids. Haemorrhage can be controlled usually with corticosteroids but, in rare cases, patients may require temporary phagocytic blockade with rituximab or intravenous immunoglobulin (IVIG). Although IVIG is an effective form of therapy, it is quite expensive and should be reserved for patients with severe thrombocytopenia and bleeding and for those who have not responded to other measures. Emergency splenectomy is usually reserved for patients with acute or chronic ITP who are desperately ill and have not responded to any medical measures designed to improve haemostasis.
- The candidate will be expected to discuss the differential diagnoses of purpura, the investigations and the treatment of ITP.

Comments on the case

This case is an important 'describe the rash' history. For all rashes, the candidate should have a set list of questions to ask, i.e. distribution, colour, size, shape, surface, itch, etc.

Case 40 | Pyrexia

Candidate information

You are the doctor in a general medical clinic. Mr Mark Hamilton is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Mark Hamilton, aged 35**
>
> I would be grateful if you could see this man who works for British Petroleum and, after a business trip to Nairobi 4 weeks ago, has developed a fever. A FBC, U&E, LFT, malarial screen and chest X-ray have all been normal. He has no relevant past medical history. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Mark Hamilton is a 35-year-old previously fit gentleman who works for British Petroleum overseeing their investment in Africa. He attended a 1-week business meeting in Nairobi 4 weeks ago. Whilst he was there he felt reasonably well and was staying in a four-star hotel. However, 3 days after coming back, he started to feel tired and feverish, particularly at night, although he would not drench the bed sheets. He has not measured his temperature but his wife tells him he feels as if he is 'burning'. The temperature comes and goes for around 12 h. He has had a slight cough but he puts this down to smoking. He has also had one bout of loose stools. He has lost 1 kg of weight as a consequence of a reduced appetite. There are no symptoms of sputum, haemoptysis, shortness of breath, abdominal pain, headaches, weakness of the arms/legs or lymph nodes. His past medical history is unremarkable. Whilst he was out there, he went sightseeing and does admit to being bitten by mosquitoes on one particular day. He took proguanil daily for malaria chemoprophylaxis throughout his trip but stopped these when he arrived back in the UK. He is intolerant to mefloquine (strange dreams) and chloroquine (sickness). Whilst in Nairobi, he had no bouts of food poisoning nor did he eat uncooked food served at street cafés. There is no family history of tuberculosis or any contact with known cases. Other recent trips include one to Lagos (4 months ago) and one to Cape Town (2 months ago); he was well throughout both these trips. He is heterosexual, never

had contact with prostitutes and has never injected drugs. He smokes 15 cigarettes a day, and drinks about one pint of beer a day. He lives with his wife and has no children. His wife is a teacher who works with young children. She does admit to having felt slightly coryzal recently.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- when he came back from Nairobi, how long he was out there for and whether the fever coincided with the trip. Did he have other trips abroad and, if so, was he well during these?
- if he has measured his temperature. If so, how high does it go and is it constant or intermittent? Does the fever ever disappear? How often does it peak?
- other symptoms, e.g. rigors, loss of weight, poor appetite, chills, fatigue, pain, respiratory, cardiovascular, gastrointestinal, neurological (headache, neck stiffness), night-sweats, lymphadenopathy, joint pains and rashes
- if there is any relevant past medical history, e.g. infections, i.e. malaria, pneumonia, tuberculosis, or recent surgery and trauma, neoplasia, connective tissue disorders and liver disorders
- drug history, especially malaria chemoprophylaxis and compliance (ideally 1 week before, during the trip and for 4 weeks after arriving back in the UK), previous immunosuppressives, e.g. corticosteroids, antibiotic therapy
- assess HIV risk, especially contact with prostitutes
- contact history, especially family (viral illness, sore throat)
- alcohol history
- the patient's concerns.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assemble a list of differential diagnoses
- explain that the cause of the temperature is uncertain
- explain the possibilities
- highlight a list of investigations to be carried out.

3. Discussion related to the case

- This case describes a pyrexia of unknown origin lasting for 3 weeks or more. The possible diagnoses are extensive and include (a) infective, e.g. malaria, TB, pyogenic abscess, urinary, biliary, joint, subacute bacterial endocarditis (SBE), viral (EBV, CMV), and others (Q fever, toxoplasmosis, brucellosis), (b) cancer, e.g. lymphoproliferative (lymphoma, leukaemia), renal cell carcinoma, hepatocellular carcinoma, (c) immunogenic, e.g. drug induced, connective tissue and autoimmune (e.g. SLE, rheumatoid), sarcoidosis, (d) miscellaneous, e.g. irritable bowel disease (IBD), thyrotoxicosis, (e) factitious and (f) unknown causes.
- The possibilities in this case include malaria (proguanil is inadequate for total chloroquine-resistant *Plasmodium falciparum* and he did not take the full chemoprophylaxis for 4 weeks after returning back to the UK), tuberculosis (cough, loss of weight, tiredness, night-time fever), non-specific viral illness; and always think of HIV infection.
- Investigations include repeating the earlier tests in case something new turns up, especially the malaria screen, blood cultures, repeat chest X-ray, full respiratory pathogen screen including viral, *Chlamydia*, *Coxiella* and *Legionella*, sputum, if any, for alcohol- and acid-fast bacilli and consider giving him a thermometer with a chart and reviewing him again shortly with the chart and blood results. Even if a malarial screen has been normal, it is worth repeating the screen a few more times. Bone marrow aspiration may have to be considered if none of the investigations points to a diagnosis.
- In order to determine tolerance and to establish habit, prophylaxis should be started 1 week before travel and continued at least 4 weeks after leaving. For sub-Saharan Africa where chloroquine resistance is widespread, recommendations include mefloquine 250 mg once weekly or, in the presence of intolerance, chloroquine 300 mg once weekly and proguanil hydrochloride 200 mg once daily.

Comments on the case

This example typifies a case where the diagnosis is not known – and it may never be! Unless a detailed history is taken, the investigator will not be able to focus on his or her pattern of investigations. Do not be afraid to ask about contact with prostitutes, particularly those visiting parts of central and east Africa. Individuals may always conceal such activity and hence one must be vigilant for HIV infection, especially if odd symptoms such as sore throats due to oral thrush (in the absence of antibiotics and corticosteroids) and lymphadenopathy are present.

Case 41 | Renal colic and haematuria

Candidate information

You are the doctor in a general medical clinic. Mr Dennis Bingley has been referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Dennis Bingley, age 78

Thank you for seeing Mr Bingley who had an episode of left-sided renal colic accompanied by macroscopic haematuria 3 weeks ago. His past medical history is unremarkable except that he has atrial fibrillation for which he takes digoxin 125 µg od and aspirin 75 mg od.

Your sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Dennis Bingley is a 78-year-old former gardener. Three weeks ago he developed a severe, sharp, colicky left-sided pain in the renal area, which lasted for 3 h and was accompanied with macroscopic haematuria. The pain radiated down to his suprapubic area and it was relieved by an intramuscular injection of diclofenac given by his GP. The macroscopic haematuria appeared soon after the onset of the renal colic and was visible throughout the stream. He does not remember passing any stones in his urine. Since this episode he has had no more episodes of renal colic and haematuria. He has suffered with prostatism for many years with symptoms of poor initiation, poor stream and postmicturition dribbling but has no dysuria. He had never noticed any blood in the urine until this recent episode. He was diagnosed as having atrial fibrillation by the GP 5 years ago for which he takes digoxin 125 µg and aspirin 75 mg once daily. He does not take warfarin. He has no respiratory, cardiovascular or abdominal symptoms. He does not complain of any loss of weight or appetite. He does not have diabetes mellitus, any coagulation problems or a previous history of kidney stones. He has not suffered any recent trauma. He lives alone and leads an active life, undertaking his own shopping and house cleaning. He stopped smoking 25 years ago and does not drink alcohol. His GP has told him that he may have kidney stones but he is concerned he may have cancer.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the history of the renal colic, including the site of the pain, the severity, the nature, the time span, radiation, any relieving factors and any aggravating factors
- the history of the haematuria, including if it was frank blood or diluted by urine and whether the haematuria was visible throughout the stream (suggests that the site of the haemorrhage is the bladder or above), at the beginning of micturition with the urine clearing towards the end of the stream (suggestive of bleeding from the urethra) or at the end of micturition (suggestive of bleeding from the bladder base or prostate)
- whether any stones were passed in the urine
- other urinary symptoms such as dysuria, poor stream, postmicturition dribbling
- any past episodes of haematuria and prostatism
- any past history of renal stones or renal disorders
- any history of hypercalcaemia, coagulation disorders or recent trauma to the back
- any medication including anticoagulants
- any family history of renal disorders, e.g. cystic disease
- other respiratory (cough, sputum, fever, haemoptysis), cardiovascular (palpitations, chest pains) and gastrointestinal (change in bowel habit, per rectal bleeding) symptoms
- history of smoking and alcohol
- any known allergies, e.g. contrast
- the impact of the illness on the patient and his concerns.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- develop a list of differential diagnoses
- explain the possible causes for his symptoms
- arrange relevant investigations
- address his concerns and particularly his worry about a possible cancer.

3. Discussion related to the case

- Haematuria (blood in the urine) can produce red to brown discoloration depending on the amount of blood present and the acidity of the urine. Slight haematuria may cause no discoloration and may be detected only by microscopy or chemical analysis. Haematuria without pain is usually due to renal, vesical or prostatic disease. In the absence of red blood cell (RBC) casts (which usually indicate glomerulonephritis), silent haematuria may be caused by a bladder or kidney malignancy. Such tumours usually bleed intermittently and should not be dismissed if the bleeding stops spontaneously. Intermittent, recurrent haematuria may also occur in IgA nephropathy. Other causes of asymptomatic haematuria include calculi, polycystic disease, renal cysts, sickle cell disease, hydronephrosis and benign prostatic hyperplasia. Haematuria accompanied by excruciating pain (renal colic), as in this case, suggests the passage of a ureteral calculus or a blood clot from renal bleeding. Haematuria with dysuria is also associated with bladder infections or stones.
- The presence of one or more red blood cells per cubic millimetre in an unspun urine sample results in a positive dipstick test for blood and this is abnormal. The test is sometimes too sensitive, giving false-positive results in normal individuals. A positive dipstick test should always be followed up by microscopy of the urine sample to confirm the presence of red cells and so exclude haemoglobinuria or myoglobulinuria which may also give false-positive dipstick tests. Microscopy may also demonstrate red cell casts which indicate bleeding from the kidney, particularly in glomerulonephritis.
- Bleeding may come from anywhere within the urinary tract and other investigations include urine cytology, plain abdominal X-ray, ultrasound of the renal tract and intravenous urography. These results will determine any further investigations, e.g. cystoscopy, abdominal CT scan, etc.
- Common causes of bleeding from the kidney include stones, cysts (single or multiple), trauma, carcinoma, glomerulonephritis, tuberculosis, papillary necrosis, infarction, tubulointerstitial nephritis and coagulation defects.

Comments on the case

This case tests the candidate's ability to obtain a thorough history of haematuria and renal colic. The candidate will be expected to discuss a management plan with the patient and to address his concerns about cancer.

Case 42 | Tiredness

Candidate information

You are the doctor in a general medical clinic. Mr Steven Waugh is referred to you by his GP.

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Steven Waugh, aged 48**
>
> Thank you for seeing this pleasant man who works for the city council as a personnel manager. He complains of tiredness during the day for the last year. He is regularly found at work by his colleagues asleep at his desk and 5 weeks ago he fell asleep at the wheel of his car, driving off the motorway onto the embankment. Past medical history includes hypertension for which he takes amlodipine 10 mg od and he is overweight at 110 kg. Recent FBC, U&E and thyroid function tests have all been normal.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Waugh is a 48-year-old man who works for the city council as a personnel manager. He gives a 1-year history of falling asleep at his desk during the day. This may happen up to five times per day and particularly during the afternoon. He has an all-day desk job with very little activity or exercise throughout the day. His colleagues have found him asleep at his desk on so many occasions that presently he is at the receiving end of numerous taunts. He does not sleep well at night and feels tired and exhausted from the time he wakes up in the morning. He has always been a heavy snorer and occasionally his wife has noticed him stopping breathing; this induces his wife to shake him to arouse him and this is then followed by a grunting noise. Unfortunately, the snoring has recently been so bad that his wife now sleeps in a separate room. When he is not at work, e.g. at weekends, falling asleep in front of the television has been a common occurrence but more worrying was the recent car accident. Falling asleep at the wheel of the car and swerving from lane to lane, particularly on the motorway, has been a problem for a number of years, but this is the first time he has had an accident. No alcohol was found when the police breathalysed him. Other symptoms of note are nocturia (three times a night) and occasional morning headaches but there is no obvious dyspnoea, chest pain, cough, sputum or ankle swelling. He has been hypertensive for 10 years and takes amlodipine. He has

always been overweight and has a size 18 collar. He does no physical exercise and drinks three cans of lager at home in the evening. He does not smoke. The snoring is obviously causing marital strife (with reduced sexual activity) and problems at work and he is desperate for help.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- how long the lethargy has been present and whether it is deteriorating or disabling
- an idea of which daily routine activities are affected by the symptoms compared to before the onset of the illness
- if the fatigue is worse with activity and better during rest (myasthenia)
- symptoms suggestive of obstructive sleep apnoea such as apnoeic episodes during sleep, feeling of poor sleep quality, daytime somnolence (falling asleep at work, in front of the television and whilst driving), loud snoring, nocturia, restlessness at night, morning headaches and reduced libido. Ask for the size of neck collar and weight
- other possible physical symptoms suggestive of endocrine disorder, especially hypothyroidism, cardiac failure, respiratory disease, renal failure and limb weakness
- past medical history of neoplasm, viral illnesses, thyroid disorder or surgery, diabetes mellitus or a psychiatric illness
- psychological symptoms, e.g. stress/anxiety, depression, poor sleep pattern, marital strife
- occupational history
- social history
- smoking and alcohol history, particularly at night which may exacerbate sleep apnoea
- drug history (legal and illegal), especially anxiolytics and benzodiazepines which aggravate sleep apnoea
- the concerns of the patient.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- decide which diagnosis the story fits with best
- be able to relay the possible differential diagnoses although in this case the likelihood is obstructive sleep apnoea (OSA)
- explain what OSA is (without jargon)
- explain that you would like to arrange a sleep study and what this may entail
- explain that if the findings of the sleep study are suggestive of OSA then continuous positive airway pressure (CPAP) may be considered
- counsel him on the alcohol intake, explaining that drinking at night may exacerbate symptoms and discuss the strategies for losing weight which can improve symptoms.

3. Discussion related to the case

- The case tests the ability of the candidate to take a detailed history and to differentiate the possible causes of tiredness such as OSA (in this case), endocrine disorders, anaemia, postviral illness, heart failure, metabolic or anxiety/depression (with poor sleep quality).
- The candidate should undertake FBC, U&E, LFT, calcium and thyroid function tests if not already done. For sleep apnoea, the Epworth Sleepiness Scale (a questionnaire) is useful to determine the likelihood of OSA. A score of over 15 out of 24 is suggestive (but not totally indicative) of OSA. The scale asks the likelihood of falling asleep when (a) sitting and reading, (b) watching television, (c) sitting in a place of activity (work), (d) passenger in a car for 1 h, (e) lying down to rest in the afternoon, (f) sitting and talking to someone, (g) sitting quietly after lunch (without alcohol), (h) sitting in the car when stopped. A sleep study (polysomnography) is performed and sleep laboratories differ in ways of performing such studies but the majority perform pulse oximetry (looking for hypoxic episodes), heart rate variability monitoring (which reflect arousals during sleep) with videoing, EEG traces and a microphone to detect levels of snoring during the night. Other departments may include recording of thoracoabdominal movements to detect any paradox (excessive movements as a consequence of airway obstruction).
- The candidate should be able to discuss the use of nasal CPAP, the impact of OSA especially with regard to road traffic accidents and discuss other causes of tiredness, especially postviral illnesses, and endocrine causes.

Comments on the case

Tiredness and lethargy are common complaints but the candidate must be aware of not falling into the automatic assumption that there may be no organic explanation. A detailed history must be taken considering all the possibilities, especially as OSA can be treated.

Case 43 | Tremor

Candidate information

You are the doctor in a neurology clinic. Mr Walter Matthews is referred to you by his GP

Please read this letter and then continue with the consultation.

> Dear Doctor
>
> **Re: Mr Walter Matthews, aged 73**
>
> Thank you for seeing Mr Matthews who works as a part-time book-keeper at the local church-run library. He is usually fit and well but recently complains of having developed shaking of his hands and is dropping books at work. He is worried that he may have Parkinson's disease. He takes aspirin for a previous TIA which he had 6 years ago. Please see and advise.
>
> Yours sincerely
>
> Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Walter Matthews is a 73-year-old, generally fit and well gentleman, who continues to work as a part-time book-keeper at the local church-run library. Over the last 8 months he has noticed shaking of his hands. These shakes are worse when he is engaged in an activity rather than when he is resting. His wife has now noticed that when he is making the tea, he cannot steadily pass a cup over without some spillage into the saucer. At work, he is finding that putting books back onto the higher shelves is slightly awkward and that he is often dropping them. His shakes do not seem to be deteriorating and there are no other symptoms such as paraesthesia, tingling, coldness, restlessness, rigidity and immobility, slowness of movements, inability to roll over in bed, dribbling of saliva, loss of memory or attention or any psychological changes. There are no particular exacerbating or relieving factors. He has no other neurological symptoms such as headache or limb weakness and no cardiovascular, respiratory, thyrotoxic or abdominal symptoms. His past medical history includes one episode of a TIA 6 years ago when he presented to his GP with a 1-h history of weakness of the left leg which returned back to full strength. He has taken aspirin 75 mg od since then. He takes no other medication. He is unsure about his family history as both his parents passed away when he was young and he has no siblings. He and his wife are self-caring, generally fit and active, taking part in weekly church activities. He has never smoked and he does not drink alcohol. He lives in a three-bedroom house and the toilet is upstairs. His main concern is the possibility of Parkinson's disease.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the time of onset of the tremor and whether it is slowly or quickly progressive
- whether the tremor is confined to the arms or hands or both; which hand/arm is worse
- whether the patient is left- or right-handed
- whether the tremor is worse at rest (Parkinson's) or on sustained posture (benign essential tremor) or fleeting, purposeless, restless and fidgety (chorea) or intentional (cerebellar)
- examples of difficulty such as bringing a glass of fluid to his mouth, passing a teacup and saucer to his wife, etc.
- any associated tremor of the head (titubation) – in benign essential tremor; or blepharospasm – seen also with Parkinson's
- any symptoms suggestive of Parkinson's disease such as paraesthesia, tingling, coldness, restlessness, rigidity and immobility, slowness of movements, inability to roll over in bed, dribbling of saliva, loss of memory or attention or psychological changes
- other neurological symptoms, especially weakness and numbness of limbs, headaches, blurring of vision, dysphasia, dysphagia, etc.
- other respiratory (e.g. cough from aspiration), abdominal (e.g. constipation in Parkinson's) and cardiovascular symptoms (postural hypotension in Parkinson's)
- history of the TIA
- drug medication (e.g. phenothiazines)
- assessment of any anxiety
- history suggestive of thyrotoxicosis
- alcohol history – does alcohol relieve the tremor?
- the impact of the condition on the family.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- assemble a list of differential diagnoses for tremor
- reassure the patient that the tremor is a benign essential tremor but that this is persistent and may progress slowly
- reassure the patient that he does not have Parkinson's disease
- explain that treatment is limited but one may try β-blockers
- address any other concerns that the patient may have.

3. Discussion related to the case

- This case allows the candidate to explore the causes of a tremor. This case typically describes a benign essential tremor (about 5–8 Hz) during sustained posture and persisting or worsening during action. This is not a parkinsonian tremor as the other classic features of this disease, i.e. resting tremor, rigidity and bradykinesia, are absent. Other possibilities include a physiological tremor exacerbated by anxiety but this is a small-amplitude tremor and rapid (about 8–12 Hz), best seen in the outstretched hands, absent at rest and attenuated through voluntary movements, cerebellar (on reaching a target), alcohol and drug induced such as those causing parkinsonism (neuroleptics), and β-agonist inhalers such as salbutamol, salmeterol and eformoterol as well as hyperthyroidism particularly thyrotoxicosis.
- Management is purely reassurance and, if symptoms continue to be troublesome, β-blockers may be considered.
- The candidate will be expected to discuss in depth the causes of parkinsonism, the features and the treatment of Parkinson's disease from a multidisciplinary perspective.

Comments on the case

This case demonstrates nicely how, by taking a detailed history and asking when the symptoms are worse (i.e. at rest or during action), one can come to the diagnosis and relieve the patient's anxieties by ruling out Parkinson's disease.

Case 44 | Visual disturbances

Candidate information

You are the doctor in a diabetes clinic. Mr Norman Baron is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Norman Baron, aged 84

Thank you for seeing this gentleman urgently. He complains of episodes of 'zig-zag' vision lasting for up to an hour. He has previously suffered from migraines but he says these current episodes are different. He takes a twice-daily premixed insulin for his diabetes and his last HbA1c was 8.9%. He is on long-acting nifedipine for hypertension. His past history includes a myocardial infarction (7 years ago) and a CVA (5 years ago) when he was found to have a right carotid artery stenosis. He also takes aspirin and his blood pressure today was 130/72 mmHg.

Please advise on diagnosis and management.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Baron is an 84-year-old widowed gentleman with diabetes mellitus who has experienced occasional episodes of funny vision over the last 8 weeks – sometimes zig-zag, sometimes blurred with difficulty in reading newspaper print which sometimes becomes shimmery in nature. These may last for up to an hour and they usually resolve spontaneously. There are no triggers and they may come on at any time of the day. There are no associated headaches, loss of consciousness, limb weakness, pain, swelling, redness or any movement problems of the eyes. There is no history of a head injury. His diabetes (first diagnosed 9 years ago) was initially treated with tablets but after an MI 2 years later, coupled with poor glycaemic control, he was changed over to insulin. At present he takes Novomix 30 insulin 16 units am and 12 units pm using a pen device. He has no problems with administering the insulin and his blood sugars are usually stable between 8 and 10. He does not suffer from hypoglycaemic attacks although every few weeks he does have a blood glucose

reading of around 3 and any associated blurred vision recovers after a sugary drink. He has never had any retinal laser therapy. Other past medical history includes a cerebrovascular accident (CVA) 5 years ago presenting as weakness in the left arm, from which he made a full recovery, and hypertension for which he takes long-acting nifedipine. At the time of his CVA, a 50% right carotid artery stenosis was detected but was not operated on. He has had migraine-like headaches but these do not cause any visual problems; only a headache and sickness. He lives alone and is self-caring, mobile and manages to collect his own pension and carry out his own shopping. He stopped smoking 35 years ago and does not presently drink. His only other medication is aspirin od. He is worried about losing his sight and is unsure if these symptoms are related to the diabetes.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- if the problem relates to one or both eyes and to which particular area of the visual field
- in detail the exact presentation of the visual symptoms, e.g. clouding (cataracts), painless visual field loss (glaucoma – as opposed to close angle glaucoma presenting with a painful red eye), painless bilateral loss of visual acuity – can he read newspaper print? (macular degeneration), blindness from vitreous haemorrhage and retinal detachment (in diabetes mellitus), progressive night-time blindness (retinitis pigmentosa)
- details of the episodes including frequency, length of symptoms, whether sudden onset and sudden resolution
- establish if the episodes of visual disturbance occur at any particular time of the day or are due to any particular movement or activity
- previous eye problems, retinal screening history and any cataract surgery
- details of the diabetes mellitus and its treatment
- details of the previous stroke, MI and cholesterol levels
- smoking and drinking history
- social history, driving history
- effect of symptoms on daily activities
- the patient's concerns and worries.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- differentiate the possible causes for the patient's visual problems, i.e. retinal problems (e.g. macular oedema or retinal detachment), migraine, TIAs, postural hypotension or hypoglycaemia, and explain these possibilities
- consider either paroxysmal AF and/or carotid stenosis/emboli as a cause of TIAs. Hypoglycaemia must be excluded as a cause
- recommend that an ophthalmological opinion should be sought unless an alternative diagnosis is obvious.

3. Discussion related to the case

- Further investigation relevant to the differential diagnoses should be considered, i.e. urgent retinal screening/eye hospital referral considered for full retinal examination.
- Postural blood pressure should be measured.
- Further investigations may include CT scan of the head, carotid Doppler, ECG recording (for AF) and a 24-h ECG recording.
- The appearance of neovascularization in response to retinal hypoxia is the hallmark of proliferative diabetic retinopathy. These newly formed vessels may appear at the optic nerve and/or macula and rupture easily, leading to vitreous haemorrhage, fibrosis and ultimately retinal detachment. Not all individuals with non-proliferative retinopathy develop proliferative retinopathy, but the more severe the non-proliferative disease, the greater the chance of evolution to proliferative retinopathy within 5 years. This creates a clear opportunity for early detection and treatment of diabetic retinopathy. In contrast, clinically significant macular oedema may appear when only non-proliferative retinopathy is present. Fluorescein angiography is often useful to detect

macular oedema which is associated with a 25% chance of moderate visual loss over the next 3 years.

- Duration of diabetes mellitus and degree of glycaemic control are the best predictors of the development of retinopathy. Non-proliferative retinopathy is found in almost all individuals who have had diabetes for >20 years (25% incidence with 5 years, 80% incidence with 15 years of type 1 diabetes mellitus).
- Efforts should be made to establish safe control, e.g. diabetes and hypertension, rather than trying to meet targets that may produce sudden effects such as hypoglycaemia or postural hypotension. The choice of the best antihypertensive agent is debatable; calcium channel antagonists and low-dose thiazides have been shown to prevent CVA in this age group but for diabetic patients ACE inhibitors should also be considered.
- New onset of migraine would be unusual at this age whereas the risk of retinal problems from either diabetes or macular degeneration is greater.

Comments on the case

This case demonstrates an elderly gentleman with episodes of disturbed vision possibly due to macular disease or early retinal detachment. The candidate must not forget to ascertain the effect of these symptoms on his daily life. Other causes must be considered and a sense of investigative urgency must be displayed.

Case 45 | Vomiting

Candidate information

You are the doctor in a respiratory clinic. Mr Azhar Khan is referred to you by his TB health visitor.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Azhar Khan, aged 24

I have asked Mr Khan to come back to clinic today because of his vomiting. He was started on Rifinah '300' 2 od, pyrazinamide 2 g od and ethambutol 800 mg od 2 weeks ago for pulmonary tuberculosis. I have asked him to stop all his tablets until review. Please see and advise.

Yours sincerely

Mrs TB Health Visitor

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the health visitor's letter.

Patient information

Mr Azhar Khan is a 24-year-old man born in the UK, of Pakistani origin. He works in a fast food chain as a food preparer. He first presented to his GP 6 weeks ago with cough, sputum, loss of weight and feeling generally unwell with a fever. Despite a course of oral amoxicillin, his symptoms persisted and a chest X-ray arranged 3 weeks after the first presentation showed right upper lobe shadowing typical of Mycobacteria tuberculosis. A subsequent sputum sample confirmed the diagnosis on microscopy, making him smear positive. He was started on quadruple therapy 2 weeks ago in the chest clinic: Rifinah '300' two tabs, pyrazinamide 2 g, ethambutol 800 mg, all once a day 30 min before breakfast. He is 54 kg and the doses are correct for this weight. Within 5 days he developed nausea and vomiting after taking the tablets. He would be vomiting up to three times in the morning and the nausea would persist into the afternoon. His appetite has decreased and he has not gained any weight. He has some epigastric tenderness, but no jaundice or right hypochondrial pain. There have been no other symptoms such as diarrhoea, dysphagia, abdominal distension, haematemesis, PR bleeding, skin reactions, peripheral neuropathy or visual disturbances suggestive of retrobulbar neuritis. There are no symptoms suggestive of labyrinthine, endocrine or metabolic disorders. Despite trying to persevere with the medication, his nausea and vomiting continued and the TB health visitor advised him to stop the medication, believing that his symptoms were drug induced. Within 2 days of stopping therapy, his symptoms have improved. LFTs on

his first visit to the chest clinic were normal. His cough and sputum persist. Contact tracing has revealed no new cases in his close contacts and, as there were no unusually susceptible individuals such as children or immunocompromised individuals working with Mr Khan at the fast food chain, it was felt that contact tracing should not be carried out here. He has not returned back to work since the microscopic confirmation of the Mycobacteria. He has no past medical history of GI disorders such as oesophageal reflux, dyspepsia, pancreatitis or previous GI surgery. He has no previous or present psychiatric history and he does not take any other medication such as antidepressants, opioids, antibiotics or dextropropoxyphene. He lives with his parents and two younger sisters. He does not drink alcohol or smoke. There is no family history of TB here in the UK or Pakistan. He has only visited Pakistan once when he was 7 years old. He is obviously concerned that his respiratory symptoms have not improved and he has lost confidence in the medication.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- chronological events of the symptoms in relation to the medication
- frequency of vomiting and nausea and for how long this persists during the day, i.e. when not vomiting does the nausea persist and if there is any relation to meals
- other GI symptoms, e.g. acid regurgitation, dysphagia, abdominal pain, dyspepsia, bloating, fullness, intestinal obstruction (distension, pain, constipation, borborygmi), diarrhoea, haematemesis and melaena
- any suggestions of hepatitis: jaundice, biliary pain, itching, dark urine
- other side-effects of tuberculosis therapy, especially skin reactions, visual disturbances, peripheral neuropathy (isoniazid). Patient would have spotted orange discoloration of urine due to the Rifinah
- other precipitating factors
- systemic symptoms, e.g. weakness, malaise, weight loss, loss of appetite
- symptoms suggestive of endocrine, metabolic or labyrinth disorders
- past history of GI disorders, e.g. reflux oesophagitis, pancreatitis or endocrine disorders and GI surgery
- psychiatric history (e.g. eating disorders, anxiety), alcohol history and family history of TB
- full drug history, including antituberculous (correct doses related to the weight of the patient), overdosing, antidepressants, opioids, antibiotics, dextropropoxyphene
- information about the contact tracing history and work history, especially contacts there and how long he has been off work
- the impact of the illness on himself and his family, and his concerns.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- identify quite clearly whether the vomiting and nausea are drug induced or not and to relay this to the patient
- have a list of investigations (e.g. LFTs)
- explain the importance of taking medication for pulmonary TB (6 months) in order to reinforce the importance of compliance
- explain that it is not known which medication is causing the symptoms and that admission to the ward with gradual introduction individually of medication at low doses is needed and this may allow gradual tolerance
- explain that it would be unwise to return to work at this stage until he has had at least 2 weeks of therapy at full doses without any side-effects and with improvement in the respiratory symptoms. He is currently still infectious
- address any other concerns and attempt to reverse any loss of confidence in the treatment
- complete a 'yellow' adverse drug reaction form for the Committee on Safety of Medicines (found at the back of the *British National Formulary*)
- notify this case if this has not already been done.

3. Discussion related to the case

- This case tests the ability of the candidate to make a list of differential diagnoses and to style the history taking appropriately around the symptoms of vomiting and nausea. The history taking should allow the candidate to conclude that the symptoms are related to the antituberculous therapy, particularly as the patient's symptoms eased after cessation of the therapy.
- Other general causes for vomiting include GI causes, e.g. peptic ulcer disease (? with pyloric outlet obstruction), gallstones, pancreatitis, small bowel Crohn's, oesophageal disorders, e.g. stricture, achalasia, functional dyspepsia, alcohol or drug induced and eating disorders and non-GI, e.g. bulimia, alcohol or drug related and psychogenic.
- As the most serious side-effect of antituberculous therapy is hepatitis, urgent LFTs are required to detect any changes in aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels. Modest elevations of these enzymes are not uncommon and, as a general rule, if levels of ALT and AST rise above five times normal or the bilirubin level is elevated, then the medication must be stopped and smaller doses reintroduced individually once the levels have normalized.
- The British Thoracic Society's guidelines on drug challenges particularly in the case of hepatotoxicity suggest the following: once liver function tests are normal, drugs can be reintroduced sequentially in the order of isoniazid, rifampicin, pyrazinamide with daily monitoring of the patient's clinical condition and liver function. Isoniazid should be reintroduced initially at 50 mg/day, increasing sequentially to 300 mg/day every 2–3 days provided no reaction occurs, and then continued. After a further 2–3 days without reaction, rifampicin at a dose of 75 mg/day can be added to a dose of 300 mg/day every 2–3 days and then to 450 mg (if weight is <50 kg) or 600 mg (if weight is ≥50 kg) as appropriate after a further 2–3 days without reaction. Finally pyrazinamide is added at 250 mg/day increasing to 1.0 g after every 2–3 days and then 1.5 g (for <50 kg body weight) or 2 g (≥50 kg).
- The candidate will be expected to know the side-effects of antituberculous therapy.
- The clinical diagnosis and management of TB, including prevention and control, have been recently updated by NICE (March 2011).
- New recommendations discuss the role of interferon-γ testing for the diagnosis of latent TB.
- Standard 6-month four-drug initial regimen (6 months of isoniazid and rifampicin supplemented in the first 2 months with pyrazinamide and ethambutol) remains the 'standard recommended regimen'.

Comments on the case

The candidate must be able to decide if the vomiting is drug induced or not and he/she has to be able to recognize that the patient may have lost all confidence in the therapy which can possibly endanger future compliance.

Case 46 | Vomiting and forgetfulness

Candidate information

You are the medical doctor on-call. Mr Kenneth French is referred to you by the surgical doctor. The patient is in the toilet so you decide to speak to his wife for more information.

Please read this letter and then continue with the consultation.

Dear Medical Colleague

Re: Mr Kenneth French, aged 75

Mr French was admitted last night with a 1-day history of vomiting. He lives 200 miles away and is currently visiting his son in this neighbourhood. The casualty officer referred him to the surgeons after suspecting small bowel obstruction but the consultant surgeon wonders if in fact the patient is suffering from gastroenteritis, after eating undercooked chicken the day before at a local pub. The reason for referral is for an opinion on the complicated previous medical history of a pituitary adenoma. His electrolytes are as follows: Na 133 mmol/L, K 5.5 mmol/L, urea 9.2 mmol/L and creatinine 123 mmol/L.

Please see and advise.

Yours sincerely

Dr S.H.O. Surgeon

You have 14 min until the relative leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you will respond to your colleague's request.

Patient information

Mr French is a retired 75-year-old librarian. The history is obtained from his wife, Mrs French. Mr French is normally a fit and well, self-caring man who enjoys long walks with the dog. He has a past history of a non-functioning pituitary adenoma for which he first presented 10 years ago to the optician with visual field loss. A CT scan of the head then confirmed the pituitary tumour and this was surgically removed. Since then he has been taking hydrocortisone 20 mg in the morning and 10 mg in the evening, levothyroxine 125 µg per day and testosterone patches. Up until his recent illness there has been no suggestion of lethargy, tiredness or fatigue suggestive of adrenal insufficiency, or weight gain, cold intolerance, constipation and voice changes suggestive of hypothyroidism. He has normal body hair distribution including facial hair. Mr and Mrs French live 200 miles away and 4 days ago they

decided to visit their son who lives in the area. On the day before admission, they went out to lunch at the local pub. Mr French did at the time wonder if the roast chicken was undercooked, but decided it was edible. Next day (day of admission), he began to feel unwell followed by continued bouts of vomiting, approximately every hour with nausea in between. There was some non-specific central abdominal pain, but no blood in the vomitus or any diarrhoea. He could not keep any oral fluids down and the son decided that he should come to the casualty department. Mr French wonders if the chicken was the culprit but no other family member had similar symptoms. Interestingly, Mr French forgot to bring his hydrocortisone tablets when visiting his son but felt he might manage without them as he had been feeling so well recently. He does not have a Medic-Alert steroid-dependent card with him either; he cannot remember where he keeps it. The treatment so far has been intravenous fluids and Mrs French says that after he had been given intravenous steroids in casualty, he felt much better and his vomiting has improved. However, Mrs French still wonders if the symptoms are related to the possible gastroenteritis as suggested by the consultant surgeon.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- an accurate history of the presenting illness; time of vomiting and its frequency, any blood, presence of nausea between vomiting, associated abdominal pain, swelling, diarrhoea or fever. Any possible food poisoning and, if so, how long before the symptoms was the food consumed?
- a full history of the pituitary problem, e.g. when first presented and with what symptoms, e.g. visual field loss (compression of optic chiasma), any symptoms suggestive of hypothyroidism, e.g. cold intolerance, slowness, weight gain, deepening of voice, skin changes, poor memory, depression, constipation, symptoms suggestive of adrenal insufficiency, e.g. weight loss, malaise, weakness, depression, nausea/vomiting, abdominal pain, syncope from postural hypotension, or symptoms suggestive of hypogonadism, e.g. poor libido, impotence, loss of secondary hair
- the treatment of the pituitary adenoma and whether he keeps a steroid Medic-Alert card. If not, why and explain the need for this
- the reasons for the steroid non-compliance. Reinforce the importance of compliance
- what treatment has been given so far in hospital
- any concerns.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- identify the reason for non-compliance
- ascertain the full pituitary history
- decide that the likely cause of the illness is steroid insufficiency and not gastroenteritis (no one else in the family had symptoms suggestive of food poisoning)
- reassure the wife
- reinforce the importance of compliance but accept that the recent lapse was a genuine error due to forgetfulness
- suggest issuing a new steroid Medic-Alert card and counsel for future illnesses, i.e. consider having an ampoule of hydrocortisone at home in case oral therapy is impossible. Say that a referral to an endocrinologist will be made and he/she will be able to advise on this matter.

3. Discussion related to the case

- This patient presents with steroid insufficiency rather than gastroenteritis as the cause of the vomiting and ill health. The omission of his treatment, persistent vomiting, the absence of diarrhoea and the improvement of his condition after intravenous steroids are

all suggestive of this diagnosis. The raised potassium would otherwise be unusual if the electrolyte disturbance was due to vomiting alone. It is of note that there was rapid improvement following rehydration and an injection of hydrocortisone. Ongoing management should include intravenous (4 hourly) or intramuscular (6 hourly) hydrocortisone 100 mg or a hydrocortisone infusion together with intravenous rehydration until the vomiting has stopped and the patient is eating. He should then return to his oral hydrocortisone. If there had been a history to suggest an intercurrent illness, then there may be a reason for continuing with a higher dose of an oral steroid for a few days before returning to the patient's standard regime.

- The candidate will need to be able to discuss the management of acute hypoadrenalism, the role of fludrocortisone, investigations for suspected Addison's disease, i.e. synacthen test, and the value of Medic-Alert cards and bracelet.

Comments on the case

This case highlights the importance of thinking laterally for a cause of the illness and not being biased by the surgical colleague's opinion. The history and the urea and electrolytes blood test support the diagnosis of adrenal insufficiency.

Case 47 | Weakness of the right arm

Candidate information

You are the doctor on-call in the general medical emergency clinic. Mr Leonard Williams is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Leonard Williams, aged 74

Thank you for your opinion on this gentleman, whom I have just seen as an emergency, with the complaint that he is unable to use his right arm. He has only recently joined my list so I do not have his full records.

He has been taking aspirin for many years, started by a cardiologist when he had palpitations 10 years ago. Eight years ago he had several episodes of weakness in his left arm and was referred to a vascular surgeon who operated on his neck.

He tells me that this current weakness has improved whilst sitting in the waiting room. On examination, I could detect no weakness or sensory loss in his right arm. Blood pressure is 134/74 mmHg and his pulse is regular.

Please see and advise regarding diagnosis and management.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room followed by 1 min for reflection before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Leonard Williams is a retired 74-year-old right-handed businessman. He has experienced four recent episodes of a sudden inability to use his right arm; the first was 4 days ago, the next two occurred yesterday and the last one was this morning. The first three lasted between 2 and 3 h and the one this morning seemed to persist much longer so he went to his GP for an emergency appointment. His arm was getting better (after about 4 h) as he waited to see the GP. About 8 years ago a similar episode occurred but he is unsure which arm was affected though his daughter remembers it being the left arm. He was admitted to hospital for scans of the head and neck that were then followed by surgery on the right side of his neck to remove a blockage. Ten years ago he saw a cardiologist because of palpitations and was told that his pulse was intermittently irregular during a 24-h ECG recording. He was started on aspirin and digoxin. He has recently become more aware of his

palpitations and on one occasion he could feel his heart beating 'very fast'. He has no other relevant history such as hypertension, ischaemic heart disease or diabetes mellitus. His wife has problems with osteoporosis so she cannot do any heavy work. His caring daughter (a senior nurse) lives away and is fully occupied with her three young children. She does not visit very often. He lives in a moderate-sized house that needs a lot of cleaning and maintenance; he thinks that it is all this hard work which has kept him healthy for so long. The neighbours are very helpful but he tends to lead a private life. Mr Williams is worried that there may not be anyone to look after him if he has a stroke or if he needs further surgery.

Examiner information

1. Data gathering in the interview

A good candidate would be expected to elicit:

- a detailed history of the weakness of the right arm, especially the number of recent episodes, which part of the arm first became weak, did this spread to the rest of the limb, any feeling of numbness, etc.
- the disability as a result of the weakness, e.g. lifting cups, doing up buttons, writing; is he left- or right-handed?
- any other associated neurological symptoms, e.g. headache, blurred vision, dysphasia, dysphagia, loss of consciousness, vomiting, seizure, confusion
- a diagnosis of the previous TIA with carotid artery stenosis and a carotid endarterectomy
- the frequency of palpitations, their nature and rate, and to elicit the history of the previous cardiology referral and probable diagnosis
- other general risk factors, e.g. family history, hypertension, ischaemic heart disease, diabetes mellitus, hypercholesterolaemia, smoking history
- that it is probably the daughter who more correctly remembers the side of the weakness. Ask about his daughter's input and ability to provide future care
- a history, including a detailed social history including the details of the house where he lives (including stairs, access to front door, toilet, kitchen facilities) and his activities of daily living
- the concerns of the patient with regard to future care.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- give a differential diagnosis for the episodes of weakness which includes TIAs and epilepsy
- consider either paroxysmal atrial fibrillation and/or carotid stenosis/emboli as a cause of the TIAs
- pick up the issue of the side of his previous TIAs and how it relates to his previous surgery
- discuss with the patient the possible diagnosis, confirmatory investigations, possible treatment with warfarin and the possibility of further carotid surgery
- appreciate the gentleman's concerns regarding loss of independence and, in particular, his wish not to impose on his daughter.

3. Discussion relating to the case

- This case tests the ability of the candidate to take a detailed history of the current and previous symptoms with an assured and accurate record of the chronological order of events. The patient clearly describes transient ischaemic attacks with a past history of atrial fibrillation (AF).
- Further investigations would include a CT scan of the head, carotid artery Doppler and a 24-h ECG recording. Treatment may include warfarin and/or he may need further carotid surgery. These procedures will need to be explained to him along with the benefits and risks associated with the warfarin treatment. The patient has had invasive carotid surgery in the past so the candidate would need to appreciate that the patient will need to be informed of the changes in surgical approach over the last few years. While it is hopeful that further events, especially cerebrovascular, may be avoided by the anticoagulation, the issue of social care along with the various management options may need to be discussed to reassure the patient that his concerns have been noted.
- Since such patients are always at risk of systemic embolization, particularly in the presence of organic heart disease, life-long anticoagulation must be considered. This is particularly important in the elderly, where the attributable risk of AF for stroke approaches

30%. Several studies have now demonstrated conclusively that the incidence of embolization in patients with AF not associated with valvular heart disease is reduced by life-long anticoagulation with warfarin-like agents. Tools like the CHADS-2 score can help to determine which patients are at high risk of cerebrovascular events due to atrial fibrillation and therefore warrant anticoagulation. Aspirin may also be effective for this purpose in patients who are not at high risk for stroke. Although anticoagulation may be associated with haemorrhagic complications, the risk is largely associated with international normalized ratios (INRs) above the recommended level of 2.1–3.0. Particular risk factors that are relevant here are prior TIAs, systemic embolus or stroke, hypertension, poor left ventricular function, rheumatic mitral valve disease and prosthetic heart valves.

- The candidate will be expected to discuss the issues of anticoagulation, primary prevention of further events, especially controlling blood pressure, and the role of antiplatelet/anticoagulation drugs in cerebrovascular disease.

Comments on the case

While this patient may not be fully abreast of the medical terminology associated with his previous medical history and procedures, he is able to give enough information to allow the candidate to establish his previous diagnoses of intermittent atrial fibrillation, transient ischaemic attacks and carotid stenosis. This gentleman has thought ahead as to what might happen if he were to have a cerebrovascular event and is concerned about the possible loss of independence. These issues need to be discussed.

Case 48 | Weight gain

Candidate information

You are the medical doctor in an endocrine clinic. Mrs Patsy Marlow is referred to you by her GP.
Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mrs Patsy Marlow, aged 44

Thank you for seeing this lady with recent weight gain. She has had type 2 diabetes mellitus for 4 years and until recently has had excellent glycaemic control. In the last 6 months her HbA1c has risen from 7.0% up to 9.8% despite maximal oral hypoglycaemic therapy and the diabetes nurses have arranged for her to change to insulin. Her weight has risen during the last year, from 80 kg up to 91 kg, and she appears to have mainly central obesity. She was found to have raised blood pressure at her recent annual review and I have started her on ramipril. Her free T4 and TSH are both normal. I have explained to her that we need to be sure that she does not have a gland problem for her weight gain.

Please see and advise on management.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mrs Patsy Marlow is a 44-year-old housewife who has had type 2 diabetes mellitus for 4 years and is under regular follow-up by the shared primary and secondary care teams. Her main problem is a weight gain of 11 kg, from 80 kg to 91 kg, over the last year. Most of the obesity is around the abdomen and this is accompanied by striae. She has never had striae except during pregnancy. Her diet and appetite have not changed and she is generally quite careful about what she eats. Other symptoms include general tiredness and fatigue during the day when carrying out household work such as washing and shopping, feeling low in mood, poor sleep, thinning of her skin and easy bruising, particularly when knocking herself on the furniture. She has noticed a change in her appearance, with facial acne and hirsutism and her face looks fuller. She has also noticed that her periods are more infrequent with scantier blood loss. Her diabetes has been reasonably well controlled until the last few months

and the GP has noticed a rise in the HbA1c over this time. Her blood sugar testing was usually between 4 and 8 but is now more commonly between 8 and 12. The diabetes nurse has suggested the possibility of insulin, about which she has expressed some concern. Recently, the GP has noticed her blood pressure to be raised and she was subsequently started on ramipril. The GP has explained that there may be an 'overactivity of her glands' which may be causing these problems. She was initially quite relieved that there may be a distinct cause for the current problems but further explanations by the GP and warning against the possibility of other co-morbidities such as osteoporosis (if left untreated) have led to considerable anxiety. She is presently on gliclazide 160 mg bd and metformin 850 mg bd. She has never taken steroids, either oral or creams. She does not drink or smoke and is happily married with three children who are in their twenties. Both parents also have diabetes mellitus and her husband works in a petrol station. She is keen to know what investigations will be carried out and whether surgery is needed. Her son is getting married in a few months and she is worried about the changes in her facial appearance.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the details of her weight gain, the distribution, any changes in diet to explain this and length of time of symptoms
- symptoms suggestive of Cushing's syndrome, e.g. change in appearance (?old photos), skin changes, e.g. thinning and bruising, hair growth/acne, striae, weakness especially climbing stairs or standing up from a sitting position (proximal muscle wasting), depression, amenorrhoea/oligomenorrhoea, poor libido, poor sleep
- other secondary clues, e.g. hypertension, worsening diabetes, bony fractures, osteoporosis
- history of the diabetes mellitus, including medication, glycaemic control, family history
- a detailed alcohol history – ?pseudo-Cushing's
- use of steroid medications, including oral, topical and vaginal creams
- her perceptions of the condition, her worries and concerns, particularly about osteoporosis.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- take a clear history of her symptoms and detect other clues suggestive of Cushing's syndrome
- attempt to gain an idea of a possible aetiology, e.g. alcohol versus an ectopic adrenocorticotrophic hormone (ACTH) cause
- explain the possible diagnoses
- explain the nature of the investigations, e.g. 24-h urine collection for cortisol excretion, dexamethasone suppression tests and blood ACTH levels initially with the possibility of scans (pituitary and adrenal)
- address her concerns regarding facial appearance, osteoporosis, long-term prognosis.

3. Discussion related to the case

- Screening tests include 24-h urinary free cortisol, cortisol circadian rhythm (only on inpatients), overnight and low-dose dexamethasone suppression tests. If cortisol levels fail to be suppressed by low-dose dexamethasone, the diagnosis of pseudo-Cushing's is unlikely but further investigations are directed to the cause of Cushing's syndrome. Suppression of cortisol to <50% on high-dose dexamethasone suppression testing would suggest Cushing's disease (pituitary) and non-suppression would suggest either ectopic ACTH or an adrenal adenoma; in the former, ACTH level will be high and in the latter this should be suppressed. Patients with Cushing's disease show an exaggerated ACTH response to corticotrophin-releasing hormone (CRH).
- Ectopic ACTH syndrome may present with a short history of weight loss with pigmented striae and

pseudo-Cushing's due to alcoholism may also present as obesity.

- The candidate will be expected to discuss the possible causes, including excess alcohol intake and iatrogenic Cushing's due to an excessive use of steroids, and be able to discuss the three main types of Cushing's – pituitary, adrenal and ectopic – and outline the interventions appropriate for these diagnoses.
- Selective trans-sphenoidal resection is the treatment of choice for Cushing's disease. The remission rate for this procedure is about 80% for microadenomas but <50% for macroadenomas. After successful tumour resection, most patients experience a postoperative period of adrenal insufficiency that may last for up to 12 months. This usually requires low-dose cortisol replacement as patients experience steroid withdrawal symptoms as well as having a suppressed hypothalamic-pituitary-adrenal axis. Biochemical recurrence occurs in approximately 5% of patients in whom surgery was initially successful.

Comments on the case

Cushing's syndrome remains a difficult problem to diagnose and manage. The two difficulties, particularly in a case like this, are (a) ascertaining whether patients have a pathological cortisol excess or a physiological disturbance of cortisol production and (b) determining the aetiology of the cortisol excess, which can include iatrogenic administration of glucocorticoids, adrenal adenomas or carcinomas, pituitary adenomas and ectopic sources of ACTH and CRH.

Case 49 | Weight loss and chronic diarrhoea

Candidate information

You are the doctor in a gastroenterology clinic. Mr Paul Jones is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Paul Jones, aged 23

Thank you for seeing Mr Jones who has returned home from India after 4 months of travelling. He complains of loss of weight and chronic diarrhoea. He has no other significant medical history and takes no medication. Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Paul Jones is a 23-year-old university graduate who has just spent 4 months travelling around India. He complains of pale, bulky stools which he finds difficult to flush away and this has persisted for around 4 months. He may pass this type of stool up to four times a day and this is associated with a progressive loss of weight from around 75 kg down to 68 kg. Closer questioning reveals that he had had these symptoms on and off for a few weeks before travelling to India. Whilst in India he was generally well apart from these symptoms but he does remember one acute episode of, what he presumed was, 'traveller's' diarrhoea 2 months into his travels. Other symptoms include occasional generalized abdominal discomfort, malaise and tiredness, particularly in the last few weeks. He has no mouth ulcers, jaundice, blood in the stools, vomiting, fever, joint pains or iritis. He has not taken any recent antibiotics, there is no family history of tuberculosis or coeliac disease and he is not aware of being in contact with anyone with tuberculosis in India. There has been no previous bowel surgery or radiotherapy and no other history of autoimmune disorders. He is heterosexual and is living with his girlfriend. He has not been exposed to any HIV risks. He does not smoke or drink alcohol.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- the timing of the onset of symptoms in relation to his trip to India
- exactly how long the symptoms have persisted for and whether they are deteriorating
- a full diarrhoea history, particularly frequency, consistency of stools, colour, difficulty in flushing away stools, presence of blood, volume (secretory diarrhoea)
- other abdominal symptoms, including pain and weight loss, and any other systemic symptoms such as mouth ulcers, iritis, joint pains and fever
- possibility of infective episodes of acute traveller's diarrhoea in India
- antibiotic and laxative usage
- tuberculosis history
- previous GI surgery or radiation therapy
- autoimmune disorders, e.g. thyroid disease, type 1 diabetes, idiopathic pulmonary fibrosis, rashes (e.g. dermatitis herpetiformis)
- dietary intake, especially cereals, wheat, rye and barley (coeliac disease)
- the impact of the symptoms on his life.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- develop a differential diagnosis
- relay these possible diagnoses to the patient
- have a plan of investigations
- address any concerns he may have, e.g. regarding the possibility of a neoplasm.

3. Discussion related to the case

- This case tests the candidate's ability to obtain a detailed history in order to assimilate a list of possible differential diagnoses. The possibilities here are (a) malabsorption, e.g. coeliac disease, bacterial overgrowth, tropical sprue, pancreatic disease, (b) infective, e.g. bacterial (*Shigella*, *Yersinia*), protozoan (amoebic dysentery, *Giardia*, *Cryptosporidia*), tuberculosis, parasitic (strongyloides), postinfective irritable bowel, (c) small bowel Crohn's disease causing malabsorption, (d) colonic neoplasm. Irritable bowel syndrome is unlikely with the loss of weight. From the history, the symptoms started before travelling to India which makes postinfective unlikely although *Giardia* can occur in the UK. So, coeliac disease is the probable cause.
- Investigations include FBC, U&E, LFT, serum iron, folate, vitamin B12, calcium and autoantibodies for antireticulin and endomysial antibodies (coeliac) and, if positive, small bowel biopsy. If antibodies are negative, consider small bowel barium follow-through to detect Crohn's disease, diverticulae and fistulae/strictures. Stool samples for infective causes and consideration of ^{14}C-glycocholic acid breath test if bacterial overgrowth is suspected.
- All differential diagnoses cannot be fully explained at this stage and hence it will be important to arrange a follow-up appointment in order to further discuss the results of investigations.

Comments on the case

This case typifies those clinical consultations where the diagnosis can be one of any number of conditions. It is imperative that the candidate does not bombard the patient with technical jargon and keeps the interview simple and reassuring. Explain that you will do all you can to find a cause and then advise on relevant treatment. As in any clinical situation, you must let the patient know which investigations are being performed, and why, and, if possible, when. Patients find it quite distressing to receive requests through the post for tests they are unfamiliar with.

Case 50 | Wheeze

Candidate information

You are the doctor in a respiratory clinic. Mr Jim Barrow is referred to you by his GP.

Please read this letter and then continue with the consultation.

Dear Doctor

Re: Mr Jim Barrow, aged 31

Thank you for seeing Mr Barrow who has been a baker since leaving school. He had asthma as a child and has been perfectly well until last year when he noticed increasing chest tightness and wheeze, despite a trial of salbutamol and beclomethasone inhalers.

Please see and advise.

Yours sincerely

Dr G. Practitioner

You have 14 min until the patient leaves the room, followed by 1 min for reflection, before the discussion with the examiners. Be prepared to discuss the solutions to the problems posed by the case and how you might reply to the GP's letter.

Patient information

Mr Barrow is a 31-year-old baker who works at one of the high street supermarkets. He had asthma as a child but 'grew out of it' at about the age of 9. Until a year ago he managed perfectly well with very few symptoms although a coryzal illness would make him slightly wheezy with a feeling of tightness in the chest. He has not needed any regular inhalers until a year ago when he developed more symptoms, with wheeze and cough particularly during the morning but less so later on in the day. He has minimal sputum and no haemoptysis but has found that he is more tired, with a wheeze, when walking long distances, especially if it is cold. As a baker, his shifts start at 3 am and finish at 11 am. He was started on a beclomethasone MDI inhaler 200 µg two inhalations bd but his symptoms have persisted. His symptoms are definitely worse at work and he finds that he has some relief when he is not at work. When he was away on holiday in Spain 2 months ago, he found he hardly ever needed the inhalers. At work, the most likely allergen to be causing bronchial hypersensitivity is flour. Flour handling, for example when preparing dough, consistently causes him to wheeze and cough whereas the exposure of flour in the actual baking areas is less troublesome. There are no extraction ventilation systems where he works and he does not wear a mask. He has no other allergic triggers apart from viruses and he does have seasonal allergic rhinitis for which he takes loratadine. He does not have a peak flow meter at home. He has no other past medical history of note and

he does not smoke. He lives with his partner who also does not smoke. They have no pets at home and their house is not damp. There has been no exposure to TB. His major concerns are the continuing symptoms which are occupationally related. He has never thought of leaving his job as a baker.

Examiner information

1. Data gathering in the interview

A good candidate would be able to elicit:

- a full history of the recent asthma symptoms, especially wheeze, cough, dyspnoea, haemoptysis. What time of the day they are worse. Obtain a chronological order of the events. Ascertain any triggers such as viral illnesses, pollen, house dust mite, animal dander, etc.
- if his symptoms are occupationally related. If so, whether his symptoms improve away from work (e.g. holidays)
- if his symptoms are occupationally related, do they come on straight away or after a time lag during the day?
- what the culprit allergen is. Think about other allergens that may cause occupational asthma, e.g. isocyanates (in varnishes, paints, adhesives) and cleaning solvents at work. Ascertain what exactly he does at work, what his job is (desk job, transportation or is he doing dough preparation/baking most of the time?), how much exposure he gets, etc. Have his symptoms got worse with time?
- past history of allergy and atopy, e.g. asthma, allergic rhinitis, eczema. Any exposure to TB. Any history of oesophageal reflux, sinusitis
- inhaler usage, technique, number of times he has needed the salbutamol as 'rescue inhalations' at work
- other job history since leaving school
- whether he has a peak flow meter at home and, if so, what his readings are
- whether there are any pets at home
- if he is a smoker
- concerns of the patient, e.g. of losing his job due to ill health.

2. Identification and use of information gathered

The candidate should be able to interpret the history and create a problem list. The objectives for the candidate are to:

- identify that the symptoms are occupationally related
- identify a likely allergen, i.e. the flour
- have a list of investigations to prove or disprove occupational asthma
- discuss the consequences of having occupational asthma.

3. Discussion related to the case

- Occupational asthma is caused, in whole or part, by agents encountered at work. Once occupational asthma has developed, the worker's asthma is nearly always provoked, in addition, by other non-specific triggers such as viral infections, cold air and exercise. Individuals with pre-existing asthma are at higher risk of developing an occupational component and the whole pattern of asthma may be transformed, with their livelihoods threatened.
- Looking for trigger factors that precipitate symptoms should be part of the assessment in all patients with asthma. All workers, irrespective of whether they are thought to be exposed or not, should be asked if their symptoms are better on days away from work and on holidays. Workers who have improvement in symptoms away from work may also improve because of avoidance of other allergens such as pets, tree pollen and moulds. Early removal of a sensitized worker from exposure has been shown to improve the prognosis, making early diagnosis particularly important.
- An in-depth occupational history needs to be taken. A chronological account of all jobs, patient exposures to the trigger and the relationship between patient exposure and the onset of symptoms should be documented. The principal points to establish are the materials to which a worker is exposed and the interval between first exposure and the onset of symptoms. If symptoms occur on first exposure, then it is probable that the material is a direct irritant. A period of symptomless exposure would favour occupational sensitization. It is relatively common for bakers to develop symptoms for the first time more than 10 years after first exposure. The problem in this case is chiefly from handling flour.
- Measuring lung function with spirometry in the clinic is relatively unhelpful as the individual is away from work. To obtain satisfactory physiological con-

firmation of occupational asthma, measurements of serial peak flows at work and at home (generally every 2 h), during weekends and during holidays are necessary to see if the peak flows show an occupational influence.

- If occupational asthma is confirmed, issues regarding changing jobs need to be addressed and referral to an occupational physician is recommended. In an ideal world, the material causing sensitization should be substituted but, if this is not possible, relocation within the workplace is recommended.
- In some patients, symptoms may take a long time to reverse and, in a proportion, symptoms with spirometry changes may persist.

Comments on the case

This case stresses the importance of taking an occupational history. It should not be underestimated how common occupational disease is, especially occupational lung disease such as asthma. Physicians should realize that one of the most common causes of occupational asthma in the UK is seen in our own workplace – endoscopy nurses exposed to glutaraldehyde.