

Test 4

Questions

Questions 1–5

Directions: Each of the questions or incomplete statements is followed by five suggested answers. Select the best answer in each case.

Q1 The Summaries of Product Characteristics (SPCs):

- A** are issued by a medicines regulatory agency
- B** have to be updated every year
- C** are intended for patients' use
- D** are the same for generic formulations as for the originator products
- E** reflect information in the marketing authorisations of medicinal products

Q2 Unlicensed use of a medicine applies to:

- A** changing an adult oral dosage form to a liquid formulation for administration to a paediatric patient
- B** use of a generic formulation instead of the originator product
- C** a request to the manufacturer for a specific amount of product for a one-time use
- D** the use of therapeutically equivalent licensed products
- E** the use of a product that is licensed with EMEA

Q3 Suspected adverse reactions:

- A are reported by health professionals directly to the European medicines agency
- B may be reported only by pharmacists
- C to any therapeutic agent should be reported
- D should be immediately disseminated to the media to alert the public
- E should be investigated by the regulatory body and, if necessary, the drug should be withdrawn prior to informing the marketing authorisation holder

Q4 Methadone:

- A has a long duration of action
- B is only available for parenteral administration
- C is an opioid antagonist
- D is not addictive
- E does not present the risk of toxicity in non-opioid dependent adults

Q5 The following statements are all applicable for a community pharmacy EXCEPT:

- A premises are easily accessible to the public
- B walls, floors, ceilings and windows are kept clean in such manner that any surfaces present shall be impervious and may be easily wiped clean
- C the premises have a clear area set aside for the preparation and compounding of medicinal products and diagnostic testing
- D all pharmaceutical and non-pharmaceutical waste and expired and deteriorated products are to be segregated from pharmacy stock
- E shop window is unobstructed when the pharmacy is closed to ensure that external appearance reflects the professional character of the pharmacy

Questions 6–15

Directions: Each group of questions below consists of five lettered headings followed by a list of numbered questions. For each numbered question select the one heading that is most closely related to it. Each heading may be used once, more than once, or not at all.

Questions 6–10 concern the use of the following drugs during pregnancy:

- A** co-trimoxazole
- B** gliclazide
- C** mesalazine
- D** lisinopril
- E** streptomycin

Select, from A to E, which one of the above:

- Q6** may cause skull defects
- Q7** has an increased risk of neonatal haemolysis during the third trimester
- Q8** may cause vestibular or auditory nerve damage
- Q9** should be stopped at least 2 days before delivery
- Q10** consists of a folate antagonist that poses a teratogenic risk

Questions 11–15 concern the following products:

- A Bezalip
- B Ezetrol
- C Lescol XL
- D Questran
- E Zocor

Select, from A to E, which one of the above:

- Q11 inhibits the intestinal absorption of cholesterol
- Q12 acts mainly by decreasing serum triglycerides
- Q13 is used in pruritus associated with partial biliary obstruction
- Q14 is an anion-exchange resin
- Q15 is a modified-release formulation

Questions 16–49

Directions: For each of the questions below, ONE or MORE of the responses is (are) correct. Decide which of the responses is (are) correct. Then choose

- A if 1, 2 and 3 are correct
- B if 1 and 2 only are correct
- C if 2 and 3 only are correct
- D if 1 only is correct
- E if 3 only is correct

Directions summarised				
A	B	C	D	E
1, 2, 3	1, 2 only	2, 3 only	1 only	3 only

Q16 Sitagliptin:

- 1 decreases insulin secretion
- 2 should not be used with metformin
- 3 may cause hypoglycaemia as a side-effect

Q17 Lucentis:

- 1 is a vascular endothelial growth factor inhibitor
- 2 is administered by intravitreal injection
- 3 requires activation by local irradiation using non-thermal red light

Q18 In juvenile chronic arthritis:

- 1 inflammatory joint disease occurs before 16 years of age
- 2 ibuprofen may be used at a dose of 30–40 mg/kg (maximum 2.4 g) daily
- 3 diclofenac is not recommended in children under 16 years of age

Q19 Babies:

- 1 under 6 months of age who have a temperature higher than 37.7°C should be referred to see a doctor on the same day
- 2 who had a prolonged, temperature-related convulsion lasting 15 minutes or longer may be treated with diazepam, preferably rectally in solution
- 3 long-term anticonvulsant prophylaxis for febrile convulsions is rarely indicated

Q20 Acute laryngotracheobronchitis:

- 1 usually occurs as a result of narrowing of the airway in the region of the larynx
- 2 dexamethasone 150 µg/kg as a single dose may be used
- 3 in severe cases nebulised adrenaline (epinephrine) solution may be considered

Q21 The risk of conceiving a child with a neural tube defect is:

- 1 increased by using folic acid at a dose of 4 µg/day
- 2 increased in women taking lamotrigine
- 3 increased in women with diabetes mellitus

Q22 Exelon patches:

- 1 patients who are taking 9 mg orally of Exelon daily and who are not tolerating the dose well may be shifted to the transdermal patch using 4.6 mg/24 hours, applying the first patch on the day after the last oral dose
- 2 same sites of application should not be re-used within 14 days
- 3 patient's body weight should be monitored during treatment

Q23 Rasilez:

- 1 should be used with caution if estimated glomerular filtration rate is less than 80 mL/minute
- 2 should not be used in patients taking other antihypertensives
- 3 tablets should be taken with or after food

Q24 Trabectedin:

- 1 does not cause gastrointestinal side-effects
- 2 requires monitoring of hepatic parameters
- 3 requires the concomitant intravenous infusion of dexamethasone

Q25 Cerebral oedema:

- 1 may present with pupillary vasoconstriction
- 2 is treated with mannitol by intravenous infusion at a dose of 200 g/kg as a 15–20% solution
- 3 may result from hypoxia at high altitude

Q26 Use of fluvoxamine in obsessive-compulsive disorder:

- 1 in children over 8 years is started at 25 mg daily
- 2 should be reconsidered if no improvement occurs within 10 weeks
- 3 may be administered with an MAOI

Q27 Somatomedins:

- 1 are a group of polypeptide hormones structurally related to insulin
- 2 should be used with caution in patients with diabetes
- 3 may induce bradycardia

Q28 In patients with cancer the use of erythropoietins:

- 1 may increase the risk of thrombosis
- 2 is intended to shorten the period of symptomatic anaemia in patients with cancer not receiving chemotherapy
- 3 is administered to achieve a target haemoglobin concentration higher than 12 g/100 mL

Q29 Pegzerepoetin alfa:

- 1 has a longer duration of action than epoetin
- 2 may be administered by subcutaneous injection
- 3 should not be used in chronic kidney disease

- Q30** In patients receiving long-term warfarin who undergo a dental extraction:
- an INR assessment should be carried out 72 hours before the procedure
 - warfarin may be continued in patients with an INR below 4.0 without dose adjustments
 - metronidazole therapy may enhance effect of warfarin
- Q31** In anaphylaxis, adrenaline (epinephrine) administration:
- is preferably carried out by the intramuscular route
 - requires monitoring of blood pressure, pulse and respiratory function
 - may be followed by a slow intravenous injection of chlorphenamine
- Q32** Rhabdomyolysis may occur as a side-effect of:
- nicotinic acid
 - aripiprazole
 - propofol
- Q33** Concomitant use of Tegretol should be avoided with:
- ranitidine
 - gabapentin
 - clarithromycin
- Q34** Which of the following preparations may be administered in the ear?:
- Sofradex
 - Canesten
 - Nasonex

Q35 Clinically significant drug interactions with ciclosporin could occur with:

- 1 Coversyl
- 2 Ciproxin
- 3 Tenormin

Q36 Malaria:

- 1 is transmitted by the bite from the female *Anopheles* mosquito
- 2 has an incubation period of up to 10 days
- 3 is widespread in Australia

Q37 In malaria, standby medication:

- 1 refers to a course of self-administered antimalarial treatment for use by travellers visiting remote malarious areas
- 2 is used if fever of 38°C or more develops 7 days or more after leaving a malarious area
- 3 consists of drugs that have been used for chemoprophylaxis by the traveller

Q38 Chemoprophylaxis of malaria with mefloquine can be undertaken with caution in:

- 1 pregnancy
- 2 epilepsy
- 3 cardiac conduction disorders

Q39 *Pneumocystis carinii* pneumonia:

- 1 is associated with immunocompromised patients
- 2 may be treated with co-trimoxazole
- 3 is rarely fatal if untreated

Q40 Pompholyx:

- 1 often affects the hands and feet
- 2 presents with pruritus
- 3 is contagious

Q41 Arnica:

- 1 is traditionally used for sprains and bruises
- 2 contains terpenoids
- 3 is not suitable for internal use

Q42 Genital warts:

- 1 present an average incubation period of 2–3 months
- 2 may become more widespread during pregnancy
- 3 are associated with the possibility of relapse in some patients

Q43 Imiquimod cream:

- 1 is used only for soft, non-keratinised lesions
- 2 may cause local ulceration
- 3 is rubbed in the area and should be washed off with mild soap and water after a specified time

Q44 Silver nitrate:

- 1 is a caustic agent
- 2 is presented as a stick or pencil in combination with potassium nitrate
- 3 may stain skin and fabric

Q45 Tetracosactide:

- 1 is an analogue of corticotropin
- 2 may be used as a diagnostic test administered by intramuscular injection
- 3 may be used in the treatment of fertility

Q46 Huntington's chorea:

- 1 is associated with rheumatic fever
- 2 has an insidious onset and usually occurs in early adulthood
- 3 affects personality and commonly presents with severe depression

Q47 Disadvantages of using tetrabenazine in Huntington's chorea are:

- 1 depletion of nerve endings of dopamine
- 2 effectiveness in only a proportion of patients
- 3 occurrence of depression as a side-effect

Q48 Whipple's disease:

- 1 is caused by a bacterial infection of the small intestine
- 2 symptoms are restricted to the gastrointestinal tract
- 3 treatment relies on antidiarrhoeal agents

Q49 Gelatin intravenous infusion:

- 1 is preferred to albumin in burns
- 2 requires adjustment of fluid and electrolyte therapy at all times
- 3 requires monitoring of urine output

Questions 50–80

Directions: The following questions consist of a first statement followed by a second statement. Decide whether the first statement is true or false. Decide whether the second statement is true or false. Then choose:

- A** if both statements are true and the second statement is a *correct explanation* of the first statement
- B** if both statements are true but the second statement is *NOT* a *correct explanation* of the first statement
- C** if the first statement is true but the second statement is false
- D** if the first statement is false but the second statement is true
- E** if both statements are false

Directions summarised			
	First statement	Second statement	
A	True	True	Second statement is a <i>correct explanation</i> of the first
B	True	True	Second statement is <i>NOT</i> a <i>correct explanation</i> of the first
C	True	False	
D	False	True	
E	False	False	

- Q50** Intravenous midazolam is often preferred to intravenous diazepam as a sedative in combined anaesthesia. Midazolam is water-soluble and recovery is faster than from diazepam.
- Q51** Infliximab is administered by subcutaneous injection at an initial dose of 5 mg/kg repeated after 2 weeks. Infliximab may be used as maintenance therapy in patients with Crohn's disease who responded to the initial induction course.
- Q52** Glyceryl trinitrate may be used topically every 12 hours for anal fissures. Glyceryl trinitrate is a nitrovasodilator that causes the anal sphincter to relax when applied topically.

- Q53** Before initiating treatment with omalizumab, body weight and immunoglobulin E concentration need to be determined. Omalizumab is a monoclonal antibody administered by subcutaneous injection for the prophylaxis of allergic asthma.
- Q54** Baseline prothrombin time should be measured in patients receiving abciximab. Abciximab is an antiplatelet agent that acts by increasing the binding of fibrinogen to receptors on platelets.
- Q55** Avandia is useful when there is failing insulin release. Avandia reduces peripheral insulin resistance.
- Q56** Avandia treatment should be started in combination with insulin. Blood-glucose control may deteriorate temporarily when Avandia is substituted for an oral antidiabetic drug.
- Q57** Dexamethasone oral therapy is preferred during pregnancy to prednisolone. Dexamethasone is a fluorinated corticosteroid that does not cross the placenta readily.
- Q58** Patients receiving bupropion should avoid using promethazine. Bupropion causes sedation as a side-effect.
- Q59** Cigarette smoking should stop completely before starting varenicline. Varenicline may cause dry mouth, taste disturbance and aphthous stomatitis as side-effects.
- Q60** Tibolone is preferred to continuous combined HRT preparations in premenopausal women. Tibolone poses an increased risk of thromboembolism compared with combined HRT or women not taking HRT.
- Q61** Patients receiving Bonviva 150 mg tablets for the treatment of postmenopausal osteoporosis are advised to take one tablet once a month. Patients should be advised to take the Bonviva 150 mg tablet at least 1 hour before breakfast or another oral medicine.

- Q62** Before the patient is started on Actonel, preventive dental treatment should be considered. Actonel is associated with osteonecrosis of the jaw.
- Q63** In patients receiving bevacizumab, parameters that should be monitored include blood pressure. Bevacizumab may cause congestive heart failure as a side-effect.
- Q64** The dose of allopurinol should be reduced in patients receiving azathioprine. Both allopurinol and azathioprine may cause hypersensitivity reactions.
- Q65** Daunorubicin should be diluted with infusion fluid to a concentration of 1 mg/mL and given over 20 minutes. Daunorubicin is an anthracycline antibiotic that is highly irritant to tissues.
- Q66** Methotrexate should be avoided in a patient with a creatinine clearance of 12 mL/minute. Methotrexate is an antimetabolite drug that is nephrotoxic.
- Q67** When habitual abortion is due to incompetence of the cervix, suturing of the cervix may be adopted. Dydrogesterone is recommended as a first-line treatment in patients with a history of recurrent miscarriage.
- Q68** Severe pain in one loin, which may last several hours and recur at intervals of days requires referral. The patient needs to be assessed for the occurrence of renal calculi.
- Q69** Urinary retention may occur with the use of trimipramine. Trimipramine has antimuscarinic activity.
- Q70** Lithium should be stopped 24 hours before major surgery. Lithium should be avoided if possible in renal impairment.
- Q71** In patients suffering from Addison's disease, lithium should be used with caution. Addison's disease is associated with sodium imbalance.

- Q72** In anaesthesia, nitrous oxide may be used up to a concentration of 66% in oxygen. Nitrous oxide is unsatisfactory as a sole anaesthetic.
- Q73** Desflurane is preferred to isoflurane for induction of anaesthesia because it is rapid acting. Desflurane is a liquid at room temperature.
- Q74** Prilocaine should be avoided in patients receiving co-amoxiclav. Prilocaine may cause ocular toxicity when used for ophthalmic procedures.
- Q75** Cocaine causes agitation, tachycardia and hypertension. Cocaine stimulates the central nervous system.
- Q76** Lantus may be considered in type II diabetic patients whose lifestyle is severely restricted by recurrent symptomatic hypoglycaemia. Lantus should not be used in combination with metformin.
- Q77** Giant cell arteritis may present with tender and non-pulsatile temporal arteries together with erythema and oedema of the overlying skin. The condition may require the use of prednisolone tablets for at least 2 years.
- Q78** Flecainide can precipitate serious arrhythmias only in patients with a history of myocardial infarction. Flecainide is a membrane stabilising drug.
- Q79** As opposed to flecainide, amiodarone is not associated with pneumonitis as a side-effect. Signs of pneumonitis include progressive shortness of breath or cough.
- Q80** Disulfiram should not be used in patients with a history of cerebrovascular accidents. Disulfiram may cause peripheral neuritis as a side-effect.

Questions 81–100

Directions: Read the patient request and follow the instructions.

Questions 81–85: For the following products, place your order of preference for a preparation to be used in severe onychomycosis in a toenail. Assign 1 to the product that should be recommended as first choice and 5 to the product that should be least recommended.

- Q81** Daktarin cream twice daily for 3 months
- Q82** Lamisil tablets 250 mg daily for 3 months
- Q83** Nizoral cream once daily for 3 months
- Q84** Sporanox capsules 200 mg twice daily for 7 days
repeated after 21 day interval for three courses
- Q85** Zovirax cream twice daily for 1 month

Questions 86–89: Put the following side-effects of mirtazapine in order of probability of occurrence, assigning 1 to the most frequent side-effect and 4 to the least common side-effect.

- Q86** abnormal dreams
- Q87** angle-closure glaucoma
- Q88** dizziness
- Q89** sedation

Questions 90–92:

A patient who is taking phenytoin and is hypersensitive to penicillin requires a broad-spectrum antibacterial agent for a respiratory tract infection.

For the following products, place your order of preference, assigning 1 to the product that should be recommended as first choice and 3 to the product that should be recommended as a last choice.

Q90 Ciproxin

Q91 Flagyl

Q92 Zithromax

Questions 93–97:

A patient presents with a prescription for cefalexin capsules. The product is not available. An alternative preparation needs to be discussed with the prescriber.

For the following products, place your order of preference, assigning 1 to the product that should be recommended as first choice and 5 to the product that should be recommended as a last choice.

Q93 Augmentin tablets

Q94 Klaricid tablets

Q95 Rocephin injections

Q96 Utinor tablets

Q97 Zinnat tablets

Questions 98–100:

A patient presents with mild-to-moderate acne.

For the following products, place your order of preference, assigning 1 to the product that should be recommended as first choice and 3 to the product that should be recommended as a last choice.

Q98 Dalacin capsules

Q99 Panoxyl gel

Q100 Roaccutane capsules

Test 4

Answers

A1 E

The Summary of Product Characteristics (SPC) for a medicinal product reflects the information in the marketing authorisation of the product. It is prepared by the manufacturer and is intended for health professionals. Updates are necessary to reflect any approved changes by the regulatory body in the marketing authorisation.

A2 A

An example of a scenario when a medicine use is unlicensed is when an adult oral dosage form is changed to a liquid formulation for administration to a paediatric patient.

A3 C

When health professionals (doctors, dentists, pharmacists, nurses) suspect an adverse reaction to any therapeutic agent including drugs, blood products, vaccines, radiographic contrast media, complementary and herbal products, they should follow the process established by the national regulatory agency. In the United Kingdom, the Medicines and Healthcare products Regulatory Agency (MHRA) has the Yellow Card Scheme through which health professionals can report suspected adverse reactions either by completing the card or electronically.

A4 A

Methadone is an opioid analgesic that is available for oral and parenteral administration. It is used in severe pain, in palliative care and as an adjunct in the management of opioid dependence. Compared with morphine, it is less sedating and has a longer duration of action. It may lead to addiction and can still cause toxicity when used in adults with non-opioid dependency. Because of the long duration of action, in overdosage, patients need to be monitored for long periods.

A5 E

Community pharmacies should be easily accessible to the public and maintained in a clean condition. Walls, floors, ceilings and windows must be kept clean and surfaces should be impervious and easily wiped. The premises should have a clear area set aside for the preparation and compounding of medicinal products and diagnostic testing, and all pharmaceutical or non-pharmaceutical waste and expired or deteriorated items should be segregated in a separate area. When the pharmacy is closed, the shop window may be totally closed off with aluminium shutters for security purposes.

A6 D

Lisinopril is an angiotensin-converting enzyme (ACE) inhibitor and ACE inhibitors should be avoided during pregnancy. ACE inhibitors may adversely affect fetal and neonatal blood pressure control and renal function. They may also cause neonatal skull defects.

A7 A

Co-trimoxazole is a folate antagonist and should be avoided in the first and the third trimesters of pregnancy. In the third trimester there is an increased risk of neonatal haemolysis and methaemoglobinaemia, whereas in the first trimester there is a teratogenic risk caused by the trimethoprim (folate antagonist) component.

A8 E

All aminoglycosides are associated with auditory or vestibular nerve damage, especially during the second and third trimesters. The risk is greatest with streptomycin and is lower with gentamicin and tobramycin.

A9 B

Gliclazide is a sulphonylurea. In general, diabetic patients are switched over to insulin during pregnancy. Sulphonylureas should be stopped at least 2 days

before delivery (in patients who are still receiving them) because of the risk of neonatal hypoglycaemia.

A10 A

Co-trimoxazole consists of trimethoprim and sulphamethoxazole combined because of their synergistic antimicrobial effects. Trimethoprim is a folate antagonist that poses a teratogenic risk.

A11 B

Ezetrol contains ezetimibe, which selectively inhibits absorption of cholesterol in the intestine. It is used as monotherapy or in combination with other drug therapy as an adjunct to lifestyle measures in patients with hypercholesterolaemia.

A12 A

Bezalip is bezafibrate that, being a fibrate, acts mainly by decreasing serum triglycerides. Fibrates have variable effects on low-density-lipoprotein cholesterol.

A13 D

Questran contains colestyramine, a lipid-regulating drug that acts as a bile acid sequestrant; it is also used in pruritus associated with partial biliary obstruction and primary biliary cirrhosis.

A14 D

Questran, which is colestyramine, binds to bile acids resulting in prevention of their re-absorption and hence promoting hepatic conversion of cholesterol into bile acids.

A15 C

Lescol XL, is a modified-release preparation of fluvastatin 80 mg, a statin.

A16 E

Sitagliptin is a dipeptidylpeptidase-4 inhibitor that increases insulin secretion and lowers glucagon secretion. Sitagliptin is available for oral administration. It is indicated in patients with type 2 diabetes mellitus in combination with either metformin (biguanide) or a sulphonylurea or a thiazolidinedione.

A17 B

Lucentis contains ranibizumab and is available for intravitreal injection. It is a vascular endothelial growth factor inhibitor indicated for the treatment of neovascular (wet) age-related macular degeneration. Unlike verteporfin, which is used in photodynamic treatment of age-related macular degeneration, ranibizumab does not require activation by local irradiation using non-thermal red light.

A18 B

Juvenile chronic arthritis is defined as a group of systemic inflammatory disorders affecting children below the age of 16 years. Pharmacotherapy is aimed to reduce pain and non-steroidal anti-inflammatory drugs are used. Ibuprofen is used at a dose of 30–40 mg/kg daily up to a maximum of 2.4 g. Other agents used include diclofenac at a dose of 1–3 mg/kg daily.

A19 A

The normal body temperature is 36.8°C. Babies under 6 months of age who have a higher temperature than 37.7°C should be referred on the same day. Babies over 6 months should be referred if their temperature is above 38.2°C. Babies who have had a temperature-related convulsion lasting 15 minutes or longer should receive pharmacotherapy in the form of either lorazepam, diazepam or clonazepam. Febrile convulsions in children usually cease spontaneously within 5–10 minutes and are rarely associated with significant sequelae and therefore long-term anticonvulsant prophylaxis is rarely indicated. Parents should be advised to seek professional advice when the child develops fever so as to prevent the occurrence of high body temperatures.

A20 A

Viral croup, also known as acute laryngotracheobronchitis, is an age-specific viral syndrome characterised by acute laryngeal and subglottic swelling, resulting in hoarseness, cough, respiratory distress and inspiratory stridor. Mild croup does not require any specific drug treatment. If a child has croup that is severe or might cause complications, then the child can be given either oral prednisolone 1–2 mg/kg or oral dexamethasone 150 µg/kg as a single dose before transfer to hospital. When the condition is not effectively controlled with corticosteroid treatment, nebulised adrenaline (epinephrine) solution could be considered. The patient requires monitoring.

A21 C

Women suffering from diabetes mellitus or who are on lamotrigine (anti-epileptic agent) have an increased risk of conceiving a child with neural tube defects. Anti-epileptic agents, particularly carbamazepine, lamotrigine, oxcarbazepine, phenytoin and valproate, increase the risk of neural tube and other defects. To counteract the risk of neural tube defects, adequate folate supplements are advised for women before and during pregnancy, at a dose of 5 mg daily until week 12 of pregnancy.

A22 A

Exelon patches contain rivastigmine, which is indicated for mild-to-moderate Alzheimer's disease and in dementia associated with Parkinson's disease. When switching a patient from oral therapy to transdermal therapy, the 4.6 mg/24 hour patch is used for patients who are either taking 3–6 mg daily or who are taking 9 mg daily but are not tolerating the dose well. Patients who are taking 9 mg oral dose and who are tolerating the dose well or who are taking 12 mg daily are started on the 9.5 mg/24 hours patch. The patch is applied on the day after the last oral dose to clean, dry, non-hairy, non-irritated skin on the back, upper arm or chest. The patch should be changed after 24 hours. As with other transdermal drug-releasing patches, Exelon patches should be applied on a different area each time, avoiding the use of the same area for 14 days. Rivastigmine is a reversible, non-competitive inhibitor of acetylcholinesterases, and may cause gastrointestinal side-effects

including gastric or duodenal ulceration as well as headache, drowsiness, tremor, asthenia, malaise, agitation, confusion, sweating and weight loss. Parameters that should be monitored include body weight.

A23 E

Rasilez contains aliskiren, which is a renin inhibitor used in hypertension as monotherapy or in combination with other antihypertensives. It is to be used with caution in patients taking concomitant diuretics, on a low-sodium diet or who are dehydrated and in patients with a glomerular filtration rate less than 30 mL/minute. Aliskiren may cause diarrhoea as a side-effect and it should be administered with or after food. It exists in two dosage strengths, 150 mg and 300 mg.

A24 C

Trabectedin is licensed for the treatment of advanced soft-tissue sarcoma when treatment with anthracyclines and ifosfamide has failed or is contraindicated. It is administered by intravenous infusion. Trabectedin may cause hepatobiliary disorders and for this reason hepatic function should be evaluated before starting treatment and during treatment. Dexamethasone is administered intravenously with trabectedin for its anti-emetic and hepatoprotective effects. As with other antineoplastic drugs, trabectedin causes nausea and vomiting and bone-marrow suppression as side-effects.

A25 E

Cerebral oedema is the excessive accumulation of fluid in the brain and is accompanied by an increase in intracranial pressure. It may be due to physical trauma, malignant disease, hypoxia at high altitude, poisoning, meningitis or stroke. Early treatment is essential and sometimes neurosurgical decompression or assisted ventilation may be necessary. Drug treatment consists of the administration of corticosteroids such as dexamethasone, particularly in oedema that is associated with malignant disease.

Intravenous administration of mannitol (osmotic diuretic) may be considered at a dose of 0.25–2 g/kg over 30–60 minutes.

A26 B

Obsessive compulsive disorder in an 8-year-old can be treated using fluvoxamine (selective serotonin reuptake inhibitor, SSRI). It is usually administered initially as 25 mg daily, and increased if necessary in steps of 25 mg every 4–7 days to a maximum of 200 mg daily. If there is no improvement within 10 weeks, treatment should be reconsidered. A selective serotonin reuptake inhibitor should not be started until 2 weeks after stopping a monoamine oxidase inhibitor (MAOI), and conversely a MAOI should not be started until at least a week after an SSRI has been stopped.

A27 B

Somatomedins are insulin-like polypeptide hormones that should be used with caution in diabetic patients since adjustment of antidiabetic therapy may be required. Before initiating therapy, a baseline ECG is recommended and, if abnormalities are identified, regular ECG monitoring during treatment is required. Somatomedins may cause tachycardia, cardiomegaly, ventricular hypertrophy and changes in blood glucose levels as side-effects.

A28 D

Erythropoietins are used to treat symptomatic anaemia associated with erythropoietin deficiency in chronic renal failure and to shorten the period of symptomatic anaemia in patients receiving cytotoxic chemotherapy. It is not recommended for use in cancer patients who are not receiving chemotherapy. In cancer patients, the risk of thrombosis and related complications might be increased. The haemoglobin concentration should be maintained within the range of 10–12 g/100 mL – higher concentrations should be avoided to reduce risk of complications of therapy.

A29 B

Pegzerepoetin alfa (also known as methoxy polyethylene glycol-epoetin beta) is a continuous erythropoietin-receptor activator that is licensed for

symptomatic anaemia associated with chronic kidney disease. It has a longer duration of action than epoetin and may be administered by subcutaneous or intravenous injection.

A30 A

Patients receiving oral anticoagulants such as warfarin may be liable to excessive bleeding after extraction of teeth or other dental surgery. For a patient who is on long-term warfarin, the INR should be assessed 72 hours before the dental procedure. This timeframe is recommended since it allows for sufficient time for dose modification if necessary. Patients undergoing minor dental procedures and dental extractions who have an INR below 4.0 do not require any dose adjustments. Drugs that have potentially serious interactions with warfarin include metronidazole, which is a commonly used anti-infective agent in dental practice because of its antiprotozoal activity. Metronidazole may enhance the effect of warfarin.

A31 A

Anaphylaxis is a severe allergic reaction that may follow drug administration or consumption of food items and insect stings. Adrenaline (epinephrine) is preferably given intramuscularly and dose is repeated according to blood pressure, pulse and respiratory function. Oxygen administration and intravenous fluids are also to be considered. An antihistamine, such as chlorphenamine given by slow intravenous or intramuscular injection is used as adjunctive treatment after adrenaline injections and continued for 1–2 days according to clinical response to prevent relapse.

A32 A

Rhabdomyolysis is the destruction of skeletal muscle tissues and may be associated with lipid-regulating drugs such as the fibrates and the statins. The risk of this side-effect is increased in patients with renal impairment and with hypothyroidism. Rhabdomyolysis may also occur with nicotinic acid, the antipsychotic aripiprazole, and the anaesthetic propofol.

A33 E

Tegretol consists of carbamazepine, which is an anti-epileptic drug. There is a clinically significant drug interaction between carbamazepine and clarithromycin (macrolide antibacterial agent) resulting in higher plasma concentrations of carbamazepine.

A34 B

Sofradex contains dexamethasone, framycetin and gramicidin and is indicated in otitis externa. Canesten contains clotrimazole and is indicated for fungal infections and may be used in otitis externa where a fungal infection is suspected. Nasonex contains mometasone, a corticosteroid, and is used in nasal allergy.

A35 B

There is an increased risk of hyperkalaemia when ciclosporin is given with Coversyl, which contains perindopril, an angiotensin-converting enzyme inhibitor. Risk of nephrotoxicity associated with ciclosporin is increased with concomitant use with quinolones. Ciproxin contains ciprofloxacin, which is a quinolone. Tenormin contains atenolol, which is a beta-adrenoceptor blocker and there are no interactions between these agents and ciclosporin.

A36 D

Malaria is a mosquito-borne disease caused by a parasite. The first symptoms of malaria tend to occur after the incubation period. The incubation period in most cases varies from 7 to 30 days. Symptoms include fever, chills and flu-like illness. Malaria is commonly encountered in Sub-Saharan and African regions.

A37 D

Travellers visiting remote, malarious areas for prolonged periods should carry standby treatment if they are likely to be more than 24 hours away from medical care. Patients should receive clear written instructions that urgent medical attention should be sought if fever (38°C or more) develops 7 days

or more after arriving in a malarious area and that self-treatment is indicated if medical help is not available within 1 day of fever onset. A drug used for chemoprophylaxis should not be considered for standby medication.

A38 E

Mefloquine prophylaxis can be undertaken with caution in cardiac conduction disorders. It should be avoided in epilepsy, during pregnancy and breast-feeding and for 3 months after pregnancy.

A39 B

Pneumocystis carinii pneumonia occurs in immunocompromised patients and it hence is a common cause of pneumonia in AIDS. High doses of cotrimoxazole are indicated for treatment of mild-to-moderate pneumocystis pneumonia. This condition should be treated by those experienced in its management as it can be fatal.

A40 B

Pompholyx eczema is a special vesicular type of dermatitis affecting the hands and feet. It can be acute and persistent, characterised by many deep-seated, itchy, clear, tiny blisters. Later there may be scaling, fissures and thickening of the skin. Outbreaks usually last several weeks, and common sites include sides of the fingers, palms and, less often, on the soles. The aim of treatment is to prevent secondary infection and spontaneous resolution is expected within 2 or 3 weeks. If, however, it persists, it may be necessary to use short courses of corticosteroid creams. It is an inflammatory reaction and there is no underlying infective component.

A41 A

Arnica has been used for medicinal purposes. It can be applied topically as a cream, ointment, liniment, salve or tincture, to soothe muscle aches, reduce inflammation and heal wounds. It is often used for injuries such as sprains and bruises. Arnica is primarily restricted to topical (external) use because it can

cause serious side-effects when ingested. Arnica consists of a number of flavonoid glycosides and terpenoids.

A42 A

Anogenital warts (condylomata acuminata) are caused by the human papillomavirus and are usually sexually transmitted. The average incubation period is 2–3 months. During pregnancy, the warts may become more widespread, favouring an even more rapid growth. Spontaneous resolution may occur. However, they tend to recur in some patients.

A43 C

Imiquimod cream is used for the treatment of external anogenital warts, where it may be used for both keratinised and non-keratinised lesions. It is also used in superficial basal cell carcinoma and actinic keratosis. Side-effects include local reactions such as itching, burning sensation, erythema, erosion, oedema, excoriation and stabbing and, less commonly, local ulceration. Patients should be advised to rub it in and to allow it to stay on the treated area for 6–10 hours for warts. The cream should then be washed off with mild soap and water.

A44 A

Silver nitrate, which is a caustic agent, is available as a stick or pen in combination with potassium nitrate and is suitable for the removal of warts on the hands and feet. It should be used with caution and patients are advised to protect the surrounding skin, as it can cause chemical burns. It can also cause staining of skin and fabric.

A45 B

Tetracosactide (tetracosactrin) is an analogue of corticotrophin (ACTH) and is used to test adrenocortical function. It is administered by intramuscular injection. Side-effects are very similar to those with corticosteroids.

A46 C

Huntington's chorea is a rare, dominantly inherited, progressive disease characterised by chorea (brief involuntary jerky muscle contractions) and dementia. It has an insidious onset and usually occurs between 30 and 50 years of age. Symptoms include uncontrolled movements, personality disorders, severe depression and anxiety.

A47 C

In Huntington's chorea, tetrabenazine is used to control movement disorders. It probably causes a depletion of nerve endings of dopamine. However, it has a useful action in only a proportion of patients and its use may be limited by the development of depression, a symptom that may already be present due to the underlying disease itself.

A48 D

Whipple's disease is a rare malabsorption syndrome, which usually occurs in men aged 30–60 years of age. It is caused by a bacterium, *Tropheryma whippelii*, which infiltrates the mucosa of the small intestine. The symptoms are characterised by arthritis, steatorrhea, weight loss, abdominal pain, fever and weakness. Treatment consists of prolonged administration of antibacterial drugs and the correction of nutritional deficiencies.

A49 C

Gelatin is a plasma substitute. Plasma substitutes should not be used to maintain plasma volume in burns or peritonitis. In these scenarios albumin should be given. Close monitoring, including monitoring of fluid and electrolyte balance and urine output, is required in patients being administered plasma and plasma substitutes. Plasma substitutes should also be used with caution in patients with cardiac disease, liver disease or renal impairment.

A50 A

Midazolam is a water-soluble benzodiazepine that is often used in preference to diazepam, since recovery is faster than with diazepam. It is indicated for

the induction of anaesthesia, and in sedation with amnesia or in intensive care.

A51 D

Infliximab is licensed for the management of severe active Crohn's disease and in rheumatoid arthritis. Maintenance therapy with infliximab should be considered for patients who respond to the initial induction course. Infliximab is administered by intravenous infusion and, for severe active Crohn's disease, it is started initially with 5 mg/kg and then 5 mg/kg 2 weeks after the initial dose.

A52 B

Glyceryl trinitrate can be used topically in the treatment of anal fissures. Being a nitrovasodilator when applied topically, glyceryl trinitrate tends to cause relaxation of the anal sphincter. It is applied to the anal canal until the pain stops.

A53 B

Omalizumab is a monoclonal antibody that binds to immunoglobulin E. It is used as additional therapy in asthma patients who have a proven IgE-mediated sensitivity to inhaled allergens and who are presenting with severe, persistent, uncontrolled asthma. It is administered by subcutaneous injection and the dose is calculated based on the immunoglobulin E concentration and body weight.

A54 C

Abciximab is a monoclonal antibody that binds to glycoprotein IIb/IIIa receptors, thereby blocking the binding of fibrinogen to receptors on platelets. It acts as by preventing platelet aggregation. It is used as an adjunct to heparin and aspirin in high-risk patients undergoing percutaneous transluminal coronary intervention. Baseline prothrombin time, activated clotting time, activated partial thromboplastin time, platelet count, haemoglobin and haematocrit should be measured at baseline. Patient monitoring is required after the start of treatment.

A55 D

Avandia contains rosiglitazone, which is a thiazolidinedione that is used as oral antidiabetic therapy. Thiazolidinediones reduce peripheral insulin resistance, resulting in reductions in blood-glucose concentrations. Inadequate response to oral antidiabetic therapy indicates failing insulin release and the impact of the introduction of rosiglitazone is of limited benefit on patient outcomes. Insulin should be considered.

A56 D

Avandia (rosiglitazone) as with other thiazolidinediones is used either as monotherapy or in combination with either metformin or a sulphonylurea. A disadvantage of rosiglitazone is the risk of heart failure as a side-effect. This risk is increased when rosiglitazone is used in patients with cardiovascular disease and when used in combination with insulin. Blood-glucose control may deteriorate temporarily when a thiazolidinedione is substituted for an oral antidiabetic agent.

A57 E

Dexamethasone is a fluorinated potent corticosteroid that readily crosses the placenta in pregnancy. Prednisolone is preferred during pregnancy since 88% is inactivated as it crosses the placenta.

A58 C

Bupropion should not be administered with sedating antihistamines because of the increased risk of seizures. Bupropion is used for smoking cessation therapy and may cause insomnia as a side-effect. Patients are advised to avoid taking bupropion dose at bedtime.

A59 D

Varenicline is a selective nicotine receptor partial agonist that is used in smoking cessation. It is started 1–2 weeks before target stop date. It may cause gastrointestinal disturbances, dry mouth, taste disturbance and, less commonly, aphthous stomatitis.

A60 E

Tibolone is a product that has oestrogenic, progestogenic and weak androgenic activity that is used for the short-term treatment of symptoms of oestrogen deficiency. Tibolone should not be used in premenopausal women since it may cause irregular vaginal bleeding in the initial stages of treatment, which in these patients may be difficult to identify. Hormone replacement therapy is associated with an increased risk of venous thromboembolism. The limited data available do not suggest an increased risk of thromboembolism with tibolone, when compared with combined HRT, or in women not taking hormone replacement therapy.

A61 B

Bonviva consists of ibandronic acid, a bisphosphonate and is available as 150 mg tablets and 1 mg/mL injection. Patients receiving the oral formulation for the treatment of postmenopausal osteoporosis are advised to take one tablet once a month. Absorption of bisphosphonates from the gastrointestinal tract may be effected by food or other administered drugs. Therefore patients are advised to take the Bonviva 150 mg tablet at least 1 hour before breakfast or another oral medicine and to continue standing or sitting upright for at least 1 hour after administration.

A62 A

Actonel contains risedronate sodium, a bisphosphonate. Osteonecrosis of the jaw has been reported in patients receiving oral bisphosphonates. Adequate oral hygiene should be maintained during and after treatment with bisphosphonates, including Actonel. Preventive dental treatment should be considered before starting bisphosphonates. Patient should be advised to maintain adequate oral hygiene during treatment.

A63 B

Bevacizumab is a monoclonal antibody that inhibits vascular endothelial growth factor. It should be used with caution in patients with a history of hypertension because of an increased risk of proteinuria and in patients with uncontrolled hypertension. Side-effects that may be expected include

hypertension and congestive heart failure. One of the parameters that should be monitored during treatment is blood pressure.

A64 B

When azathioprine is administered concomitantly with allopurinol, there is a risk of enhanced effects and increased toxicity of azathioprine. Doses of azathioprine should be reduced to one quarter of the usual dose. Both allopurinol and azathioprine may cause hypersensitivity reactions.

A65 A

Daunorubicin is an anthracycline antibiotic used in chemotherapy. It is diluted with infusion fluid to a concentration of 1 mg/mL and given over 20 minutes to reduce the occurrence of irritation. A liposomal formulation is also available.

A66 A

Methotrexate is an antimetabolite drug that is excreted primarily by the kidney. It is contraindicated in significant renal impairment and in hepatic impairment. It is nephrotoxic and accumulation may occur in renal impairment. Dose should be reduced in renal impairment that is not severe and drug should be avoided if creatinine clearance is less than 20 mL/minute.

A67 C

Habitual abortion is repeated spontaneous abortion. Suturing of the cervix may prevent abortion in cases of cervical incompetence. Administration of low-dose aspirin and a prophylactic dose of a low-molecular-weight heparin may be beneficial in pregnant women having antiphospholipid syndrome and who have suffered recurrent miscarriage, since aspirin and heparin decrease the risk of fetal loss. Dydrogesterone is a progestogen analogue that, although it has been used for the prevention of spontaneous abortion in women with a history of recurrent miscarriage, is not recommended for use in this scenario, because of lack of evidence.

A68 A

Severe pain in the loin lasting several hours and which is recurring requires referral to investigate underlying cause. One of the systems that need to be investigated is the renal system. Pain originating from kidney disorders and renal colic (renal calculi) initially presents with loin pain and may radiate to the back or spread downwards to the iliac fossa, suprapubic area and in males into the scrotum.

A69 A

Trimipramine is a tricyclic antidepressant with sedative properties that is used in the management of depression. As with other tricyclic antidepressants, trimipramine has antimuscarinic activity and therefore side-effects include dry mouth, blurred vision, constipation and urinary retention.

A70 B

Lithium is used in the prophylaxis and treatment of mania and in the prophylaxis of bipolar disorders and recurrent depression. Lithium should be stopped 24 hours before major surgery but the normal dose can be continued for minor surgery, with careful monitoring of fluids and electrolytes. After major surgery, renal function is reduced and this may compromise clearance of lithium. Lithium is a drug with a narrow therapeutic index and it should be avoided if possible in patients with renal impairment. Renal function should be tested before initiating treatment. If lithium is given to patients with renal impairment, a reduced dose should be used and serum lithium concentrations should be monitored closely.

A71 A

Lithium should be used with caution in conditions with sodium imbalance, such as Addison's disease.

A72 B

Nitrous oxide is used for the maintenance of anaesthesia as part of a combination of drugs because, owing to its lack of potency, it cannot be used

as a sole anaesthetic. Using nitrous oxide at a concentration of 50–66% in oxygen, a reduced dose of other anaesthetics can be adopted.

A73 D

Desflurane is a rapid-acting, volatile, liquid anaesthetic. However, compared with isoflurane, it has a lower potency. Desflurane is not used for the induction of anaesthesia, as it is irritant to the upper respiratory tract leading to cough, apnoea, laryngospasm and increased secretions.

A74 D

Prilocaine is a local anaesthetic of low toxicity, which should be avoided in severe or untreated hypertension, severe heart disease and in patients using drugs that may cause methaemoglobinaemia. Prilocaine may cause ocular toxicity, which has been reported with the use of the product in excessively high doses during ophthalmic procedures.

A75 A

Cocaine readily penetrates mucous membranes and is an effective topical local anaesthetic that demonstrates intensive vasoconstrictor action. It has stimulant effects on the central nervous system and is a drug of addiction. It causes agitation, dilated pupils, tachycardia, hypertension, hallucinations, hyperthermia, hypertonia, hyperreflexia and cardiac effects.

A76 C

Lantus contains insulin glargine, which is a human insulin analogue that provides a prolonged duration of action and requires once daily administration. It is recommended for patients who are suffering from recurrent symptomatic hypoglycaemia. Because of the once-daily dosage regimen it is useful in patients who have difficulty with handling insulin administration. Some patients may be administered a combination of insulin therapy and oral antidiabetics including metformin (biguanide).

A77 B

Giant cell arteritis (cranial or temporal arteritis) is an inflammatory condition that may affect any of the large arteries, especially the temporal and occipital arteries. The thickened temporal arteries may be tender and non-pulsatile, with erythema and oedema of the overlying skin. Early treatment with high-dose corticosteroids such as prednisolone is essential and should be continued for a minimum of 2–3 years at a reduced dose.

A78 D

Flecainide is a drug used for arrhythmias and is of particular use in ventricular arrhythmias and paroxysmal atrial fibrillation. Flecainide has a membrane-stabilising activity. Use of flecainide may precipitate serious arrhythmias, even in patients with no history of cardiovascular disease and with otherwise normal hearts.

A79 D

Amiodarone is a drug used for arrhythmias, which has very similar properties to flecainide. Both drugs may cause pneumonitis as a side-effect but risk is lower with flecainide. Signs of pneumonitis include progressive shortness of breath or cough.

A80 B

Disulfiram is used as an adjunct in the management of alcohol dependence. It is contraindicated in patients with a history of cerebrovascular accident, cardiac failure, coronary artery disease, hypertension and psychosis. Side-effects that may be present include initial drowsiness and fatigue, nausea, vomiting, halitosis, reduced libido, psychotic reactions, allergic dermatitis, peripheral neuritis and hepatic cell damage.

A81–85

Onychomycosis is a fungal nail infection. In severe cases, oral antifungals are recommended as first-line agents. Oral triazole antifungals such as itraconazole (Sporanox capsules) as well as terbinafine (Lamisil tablets) are recommended. Treatment with itraconazole poses a lesser burden to patients

in terms of number of doses required when compared with terbinafine. When used topically, imidazole antifungal agents such as miconazole (Daktarin cream) and ketoconazole (Nizoral cream) are less effective in severe onychomycosis and twice-daily administration is required at least. Aciclovir (Zovirax cream) is an antiviral agent and does not provide any clinical input in onychomycosis.

A81 3

A82 2

A83 4

A84 1

A85 5

A86–89

Mirtazapine is indicated for major depression. Its side-effects include sedation and, less commonly, dizziness, abnormal dreams (rarely) and, very rarely, angle-closure glaucoma.

A86 3

A87 4

A88 2

A89 1

A90–92

In patients allergic to penicillin, macrolides are usually indicated in mild respiratory tract infections. Zithromax contains azithromycin, which is a macrolide that may be indicated for respiratory tract infections. As opposed to clarithromycin (another macrolide), azithromycin does not present any significant clinical interaction with phenytoin. Ciproxin contains ciprofloxacin,

which is a quinolone. When ciprofloxacin is used in patients who are taking phenytoin, the plasma concentration of phenytoin may be increased or decreased. In addition, quinolones should be used with caution in patients with a history of epilepsy, since they lower the seizure threshold. Flagyl, which contains metronidazole, is not normally used in respiratory tract infections, since metronidazole is particularly active against anaerobic bacteria and protozoa. Concomitant use of metronidazole and phenytoin is associated with a significant clinical interaction, resulting in inhibition of metabolism of phenytoin.

A90 2

A91 3

A92 1

A93–97

Cefalexin is a first-generation cephalosporin and therefore an alternative preparation would be Zinnat tablets, which contains cefuroxime, a second-generation cephalosporin. A penicillin such as Augmentin, which contains co-amoxiclav, can be an appropriate alternative since it provides a very similar spectrum of activity. Klaricid contains clarithromycin, which is a macrolide. Utinor contains norfloxacin, which is a quinolone that is effective in uncomplicated urinary-tract infections. Rocephin contains ceftriaxone, which is a third-generation cephalosporin that is available for parenteral administration only.

A93 2

A94 3

A95 5

A96 4

A97 1

A98-100

In mild-to-moderate acne topical treatment such as benzoyl peroxide (Panoxyl gel) is usually recommended, followed by clindamycin (Dalacin capsules). Roaccutane capsules, which contain isotretinoin, are reserved for more severe cases of acne.

A98 2

A99 1

A100 3