



RESPIRATORY PHARMACOLOGY MCQ QUESTION BANK

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BRONCHIAL ASTHMA — DEFINITION, TYPES & PATHOGENESIS

Questions 1–22

- 1 Which of the following BEST describes bronchial asthma?
 - a) Chronic inflammatory disease with reversible bronchospasm
 - b) Chronic restrictive lung disease with permanent airway narrowing
 - c) Acute bacterial infection of the bronchi
 - d) Allergic reaction without airway involvement
- 2 Which type of asthma is MOST associated with a high serum IgE?
 - a) Exercise-induced asthma
 - b) Atopic (allergic) asthma
 - c) Late-onset eosinophilic asthma
 - d) Non-type II asthma
- 3 Which immunologic pathway is PRIMARILY involved in allergic asthma?
 - a) Type I hypersensitivity (IgE mediated)
 - b) Type II hypersensitivity (IgG mediated)
 - c) Type III hypersensitivity (immune complex)
 - d) Type IV hypersensitivity (cell mediated)
- 4 Which classification refers to asthma with continuous symptoms despite therapy?
 - a) Mild intermittent
 - b) Partially controlled
 - c) Infrequent attacks
 - d) Severe persistent
- 5 Which is NOT a typical trigger for bronchial asthma?
 - a) Respiratory infection
 - b) Pollen exposure
 - c) High altitude
 - d) Exercise
- 6 Which bronchodilator is MOST selective for β_2 adrenergic receptors?
 - a) Theophylline
 - b) Ipratropium
 - c) Salbutamol
 - d) Tiotropium
- 7 Which adverse effect is MOST associated with LABA use?
 - a) Growth retardation
 - b) Oropharyngeal candidiasis
 - c) Tremors
 - d) Gastric irritation
- 8 Which step of asthma management FIRST introduces a maintenance ICS–LABA as the alternative controller?
 - a) Step 1
 - b) Step 3
 - c) Step 5
 - d) Step 2
- 9 Which is NOT a pharmacological reliever for an acute asthma attack?
 - a) Short acting theophylline
 - b) SABA
 - c) Maintenance inhaled corticosteroid alone
 - d) Low dose ICS–formoterol
- 10 Which intervention is LEAST appropriate in acute severe asthma?
 - a) SABA by inhalation
 - b) Starting a long-term physical activity programme
 - c) Systemic corticosteroids
 - d) Endotracheal intubation
- 11 In the early phase of allergic asthma, which interleukin released by TH2 cells drives B cells to secrete IgE?
 - a) IL-4
 - b) IL-13
 - c) IL-17
 - d) IL-5
- 12 Which cytokine released in the early phase of allergic asthma binds receptors on eosinophils and prolongs their survival?
 - a) Interferon gamma
 - b) IL-4
 - c) IL-5
 - d) IL-13
- 13 The late phase of allergic asthma appears within which time frame?
 - a) 30 to 60 minutes
 - b) 2 to 7 hours
 - c) 12 to 24 hours
 - d) 7 to 10 days
- 14 Tissue damage in the late asthmatic response activates which pathway?
 - a) The complement cascade
 - b) The arachidonic acid pathway, producing prostaglandins and leukotrienes
 - c) The renin–angiotensin system
 - d) The coagulation cascade

15 Type II (atopic) asthma differs from non-type II asthma in that it is:

- a) Less severe, without systemic eosinophilia
- b) Never associated with a raised serum IgE
- c) Unresponsive to corticosteroids
- d) More severe, with systemic eosinophilia and responsive to corticosteroids

16 Classification of asthma into intermittent and persistent depends on all the following EXCEPT:

- a) Night-time symptoms
- b) Number of bronchoconstrictor episodes
- c) Serum IgE level
- d) Peak expiratory flow

17 Which non-pharmacological measure is recommended in the treatment outline of bronchial asthma?

- a) A high protein diet
- b) Daily antibiotic prophylaxis
- c) Avoiding NSAIDs
- d) Fluid restriction

18 Which drug group is the first choice in aspirin-induced asthma?

- a) Leukotriene pathway inhibitors
- b) Inhaled corticosteroids alone
- c) Cromolyn sodium
- d) Antimuscarinics

19 A thyrotoxic elderly patient with cardiac disease develops asthma. Which bronchodilator does the booklet prefer?

- a) Ipratropium or tiotropium
- b) High dose salbutamol
- c) Epinephrine
- d) Oral theophylline

20 For prophylaxis of exercise-induced asthma, a SABA is taken:

- a) 12 hours before exercise
- b) 1 hour before exercise
- c) 10 minutes before exercise
- d) Immediately after exercise

21 Which drug is useful as maintenance therapy in COPD because vagal-induced bronchospasm is the only reversible cause of obstruction?

- a) Omalizumab
- b) Cromolyn
- c) Salbutamol
- d) Tiotropium

22 Which preparation is preferred in nocturnal asthma?

- a) Sustained-release theophylline
- b) IV aminophylline
- c) Nebulised epinephrine
- d) Inhaled cromolyn

BRONCHODILATOR DRUGS

Questions 23–34

23 β_2 agonists produce bronchodilation by which mechanism?

- a) Stimulating β_2 receptors, raising cAMP
- b) Blocking M_3 receptors
- c) Inhibiting phosphodiesterase
- d) Blocking adenosine A_2 receptors

24 Besides bronchodilation, β_2 agonists also:

- a) Thicken bronchial secretions
- b) Inhibit 5-lipoxygenase
- c) Increase bronchial mucociliary clearance
- d) Block vagal reflexes

25 Why must a LABA always be combined with a corticosteroid?

- a) The combination is cheaper
- b) It is inactivated by gastric acid without steroid cover
- c) Given alone it masks disease progression and increases mortality risk
- d) The steroid prevents oropharyngeal candidiasis

26 How does a LABA increase the anti-inflammatory effect of cortisone?

- a) By raising plasma cortisol
- b) By blocking leukotriene receptors
- c) By inhibiting hepatic steroid metabolism
- d) By increasing nuclear localisation of the steroid receptor

27 Which is a recognised adverse effect of β_2 agonists?

- a) Hypokalaemia and muscle cramps
- b) Hyperkalaemia
- c) Bradycardia
- d) Hypertension

33 Which statement about epinephrine in asthma is correct?

- a) It is the first-line maintenance controller
- b) It is selective for β_2 receptors
- c) It is given by inhalation only
- d) It has largely been replaced by selective β_2 agonists but is used in acute bronchospasm with anaphylaxis

34 Bambuterol is best described as:

- a) An inhaled SABA
- b) An oral prodrug of terbutaline used as a controller
- c) A leukotriene receptor antagonist
- d) A LAMA

28 β_2 agonists may worsen oxygenation because they:

- a) Increase oxygen consumption
- b) Cause pulmonary oedema
- c) Depress the respiratory centre
- d) Worsen the ventilation/perfusion ratio by vasodilatation exceeding bronchodilatation

29 Tolerance to β_2 agonists is due to:

- a) Enzyme induction
- b) Down-regulation of β_2 receptors
- c) Depletion of intracellular cAMP stores
- d) Antibody formation

30 Antimuscarinic bronchodilators act by:

- a) Blocking M_3 receptors in bronchial muscle
- b) Stimulating β_2 receptors
- c) Inhibiting acetylcholinesterase
- d) Blocking M_2 receptors selectively

31 Why does ipratropium, unlike tiotropium, produce tolerance?

- a) It down-regulates M_3 receptors
- b) It is rapidly metabolised in the lung
- c) It is non-selective and blocks presynaptic M_2 receptors, increasing ACh release
- d) It is absorbed systemically

32 Compared with a β_2 agonist, an antimuscarinic bronchodilator has:

- a) A faster onset and is more effective
- b) The same onset but longer duration
- c) No bronchodilator effect in COPD
- d) A delayed onset and is less effective

METHYLYXANTHINES

Questions 35–45

35 Methylxanthines produce bronchodilation by:

- a) Stimulating β_2 receptors directly
- b) Inhibiting 5-lipoxygenase
- c) Inhibiting phosphodiesterase, raising cAMP, and blocking adenosine A_2 receptors
- d) Blocking M_3 receptors

36 Theophylline is eliminated by saturation kinetics, which means:

- a) It is excreted unchanged by the kidney
- b) A small dose increase may cause a large rise in plasma level and toxicity
- c) It has a very wide safety margin
- d) Its clearance is independent of dose

37 Which is a contraindication to methylxanthines?

- a) Diabetes mellitus
- b) Peptic ulcer
- c) Osteoporosis
- d) Hypertension

38 Which of these INCREASES theophylline half-life and so requires a DOSE REDUCTION?

- a) Erythromycin
- b) Rifampicin
- c) Phenytoin
- d) Heavy smoking

39 In which patient would you EXPECT to need a higher theophylline dose?

- a) An elderly patient
- b) A patient with heart failure
- c) A heavy smoker
- d) A neonate

40 Which adverse effect follows rapid intravenous aminophylline?

- a) Oropharyngeal candidiasis
- b) Hyperkalaemia
- c) Optic neuritis
- d) Cardiac arrest

41 Theophylline relieves dyspnoea in COPD partly because it:

- a) Acts as a potent diuretic
- b) Dilates cerebral blood vessels
- c) Increases contractility and reverses fatigue of the diaphragm
- d) Suppresses the cough centre

42 Which methylxanthine effect explains its use in neonatal apnoea?

- a) Bronchodilation alone
- b) Respiratory stimulation (caffeine)
- c) Diuresis
- d) Positive inotropic action

43 Which preparation of theophylline provides a full anti-inflammatory effect with fewer side effects and no need for plasma monitoring?

- a) Low dose theophylline
- b) Rectal aminophylline
- c) High dose immediate-release theophylline
- d) IV aminophylline

44 Theophylline can be given by all the following routes EXCEPT:

- a) Slow intravenous
- b) Inhalation
- c) Oral
- d) Rectal

45 Which GIT effect of theophylline explains giving it with meals?

- a) It is destroyed by gastric acid
- b) It delays gastric emptying
- c) It causes constipation
- d) It increases HCl secretion and irritates the stomach

ANTI-INFLAMMATORY & BIOLOGIC THERAPY

Questions 46–63

46 Glucocorticoids control asthma mainly by:

- a) Stabilising mast cell membranes only
- b) Inhibiting phospholipase A₂ and cytokines, reducing inflammation and hyper-reactivity
- c) Blocking M₃ receptors
- d) Antagonising leukotriene receptors

47 Corticosteroids potentiate β_2 agonists because they:

- a) Inhibit the metabolism of salbutamol
- b) Raise intracellular calcium
- c) Increase β_2 receptor affinity for adrenaline
- d) Decrease down-regulation of β_2 receptors, reducing tolerance

48 Oral corticosteroids as rescue medication in an acute exacerbation are given for a maximum of:

- a) 14 days
- b) 1 month
- c) 7 days
- d) 3 days

49 How is oropharyngeal candidiasis from inhaled corticosteroids avoided?

- a) Taking the inhaler on an empty stomach
- b) Halving the dose
- c) Switching to the oral route
- d) Gargling and spitting after inhalation, and using a spacer

50 Which inhaled corticosteroid is a prodrug activated by bronchial esterases, with less systemic effect and less frequent candidiasis?

- a) Beclomethasone
- b) Ciclesonide
- c) Fluticasone
- d) Budesonide

51 Which is a systemic adverse effect of corticosteroids listed in the booklet?

- a) Red–green colour blindness
- b) Cataract and glaucoma
- c) Optic neuritis
- d) Hyperkalaemia

52 Zileuton acts by:

- a) Blocking leukotriene receptors
- b) Binding circulating IgE
- c) Stabilising mast cells
- d) Inhibiting 5-lipoxygenase

53 Montelukast and zafirlukast act by:

- a) Inhibiting 5-lipoxygenase
- b) Antagonising leukotriene receptors
- c) Inhibiting phosphodiesterase
- d) Blocking IL-5

54 Which advantage do leukotriene pathway inhibitors have over inhaled therapy, especially in children?

- a) They need no adherence to dosing
- b) They act within seconds
- c) They can be used as a reliever in acute attacks
- d) They are taken orally, with a long duration and minimal side effects

55 Zafirlukast interacts with other drugs because it is:

- a) Excreted unchanged in urine
- b) An enzyme inhibitor
- c) Highly protein bound only
- d) An enzyme inducer

56 Cromolyn and nedocromil act by:

- a) Inhibiting mast cell degranulation and eosinophil activation
- b) Inhibiting phosphodiesterase
- c) Binding IgE in the circulation
- d) Blocking M₃ receptors

57 Which statement about cromolyn is correct?

- a) It is given orally twice daily
- b) It is prophylactic and must NOT be used in an acute attack
- c) It replaces inhaled corticosteroids in severe asthma
- d) It is the drug of choice in status asthmaticus

58 Throat irritation, cough and bronchospasm from powdered cromolyn are avoided by:

- a) Using a nebuliser only
- b) Halving the dose
- c) Taking it with food
- d) Prior inhalation of a β_2 agonist

59 Omalizumab works by:

- a) Binding circulating IgE and preventing it binding to mast cells
- b) Antagonising IL-4
- c) Stabilising mast cells directly
- d) Blocking the IL-5 receptor

60 Which monoclonal antibody is directed against IL-4 and is also used in atopic dermatitis?

- a) Omalizumab
- b) Benralizumab
- c) Mepolizumab
- d) Dupilumab

61 Benralizumab differs from mepolizumab in that it binds:

- a) Circulating IgE
- b) IL-13
- c) IL-4
- d) The IL-5 receptor

62 The most serious adverse effect of omalizumab is:

- a) Adrenal suppression
- b) Blood eosinophilia
- c) Optic neuritis
- d) Anaphylaxis

63 Ketotifen is best described as:

- a) A long acting antimuscarinic
- b) A leukotriene receptor antagonist
- c) A mast cell stabiliser with antihistaminic action, related to cromolyn
- d) An inhaled corticosteroid prodrug

ACUTE EXACERBATION & STATUS ASTHMATICUS

Questions 64–69

64 In a mild to moderate acute exacerbation, the recommended oral prednisone dose is:

- a) 40–50 mg
- b) 2.5 mg
- c) 100–150 mg
- d) 5–10 mg

65 Status asthmaticus is refractory to the usual treatment because of all the following EXCEPT:

- a) Acidosis
- b) Down-regulation of β receptors
- c) Up-regulation of β receptors
- d) Mucus plugs

66 Which drug class must be AVOIDED in status asthmaticus?

- a) Systemic glucocorticoids
- b) Sedatives
- c) Inhaled SABA
- d) Inhaled ipratropium

67 In status asthmaticus, aminophylline is given:

- a) By slow IV infusion, to avoid cardiac arrest
- b) Rectally in all cases
- c) As a rapid IV bolus
- d) By inhalation

68 Which is part of the hospitalisation measures in status asthmaticus?

- a) Routine antivirals
- b) IV fluids to correct dehydration, electrolytes and acidosis
- c) Immediate discharge on oral steroid
- d) Fluid restriction

69 Salbutamol in a mild to moderate acute exacerbation is given by inhalation, but may also be given:

- a) Intravenously
- b) Transdermally
- c) Rectally
- d) Intrathecally

DRUG THERAPY OF COUGH

Questions 70–88

70 Which of the following is **CORRECTLY** matched?

- a) Acetylcysteine / suppresses the cough centre
- b) Volatile oils / antitussives and expectorants
- c) Dextromethorphan / expectorant
- d) Guaifenesin / opioid antitussive

71 The cough reflex is controlled by a centre in the:

- a) Medulla
- b) Pons
- c) Hypothalamus
- d) Cerebellum

72 Cough receptors may be stimulated from sites **OUTSIDE** the respiratory passages, including all the following **EXCEPT**:

- a) Heart
- b) Ears
- c) Oesophagus
- d) Kidney

73 Central antitussives are indicated in:

- a) Asthma with wheeze
- b) Productive cough with thick sputum
- c) Bronchiectasis
- d) Moderate to severe dry cough

78 Antihistamines such as diphenhydramine suppress cough by:

- a) Acting as demulcents
- b) Breaking disulfide bonds in mucus
- c) Blocking H₁ receptors, suppressing the central cough mechanism and raising the threshold for afferent impulses
- d) Inhibiting phosphodiesterase

79 The mechanism of peripheral antitussives such as menthol is:

- a) Bronchodilation
- b) Blocking opioid receptors in the medulla
- c) Reducing sputum viscosity
- d) A demulcent action, protecting irritant receptors with a layer of mucin

80 Which serious adverse effects are attributed to menthol?

- a) Agranulocytosis
- b) Seizure, coma and death
- c) Optic neuritis
- d) Nephrotoxicity

74 Which is the **FIRST** choice central antitussive?

- a) Dextromethorphan
- b) Codeine
- c) Pholcodine
- d) Diphenhydramine

75 Which adverse effect of codeine is characteristically **PARADOXICAL** in children?

- a) Drowsiness
- b) Constipation
- c) Excitement
- d) Respiratory depression

76 Dextromethorphan is preferred to codeine because it causes less:

- a) Sputum retention
- b) Constipation, respiratory depression and dependence
- c) Bronchospasm
- d) Hallucination

77 Which is the characteristic adverse effect of pholcodine?

- a) Hallucination
- b) Optic neuritis
- c) Urine retention
- d) Sputum retention

81 Acetylcysteine and carbocysteine reduce sputum viscosity by:

- a) Breaking down acid mucopolysaccharide fibres
- b) Blocking M₃ receptors
- c) Breaking disulfide bonds of thick mucus
- d) Increasing the volume of bronchial secretion

82 Which mucolytic is also the antidote in paracetamol toxicity?

- a) Acetylcysteine
- b) Guaifenesin
- c) Ambroxol
- d) Bromhexine

83 Ambroxol acts by:

- a) Suppressing the cough centre
- b) Breaking down acid mucopolysaccharide fibres so sputum is less viscous
- c) Increasing secretion volume
- d) Breaking disulfide bonds

84 Which adverse effect is characteristic of bromhexine?

- a) Seizures
- b) Angioedema
- c) Hallucination
- d) GIT upset with pain in the upper stomach

85 Guaifenesin acts as an expectorant by:

- a) Breaking disulfide bonds in mucus
- b) Protecting irritant receptors
- c) Increasing the volume and decreasing the viscosity of bronchial secretion
- d) Blocking H₁ receptors

86 Which cough therapy is CONTRAINDICATED in children?

- a) Salbutamol
- b) Ambroxol
- c) Acetylcysteine
- d) Pholcodine

87 Which group is used in the SPECIFIC treatment of cough?

- a) Demulcents
- b) Bronchodilators and decongestants
- c) Mucolytics
- d) Central antitussives

88 Mucolytics are indicated in all the following EXCEPT:

- a) Productive cough
- b) COPD
- c) Pulmonary cystic fibrosis
- d) Dry irritant cough

PULMONARY TUBERCULOSIS

Questions 89–109

- 89** Which drug is NOT first-line therapy for pulmonary tuberculosis?
- Ethambutol
 - Isoniazid
 - Rifampicin
 - Linezolid
- 90** A patient with latent TB infection can be treated with:
- Rifampicin alone for 9 months
 - Pyrazinamide for 6 months
 - Isoniazid for 9 months, or isoniazid plus rifapentine for 3 months
 - Ethambutol for 12 months
- 91** Which drug is recommended in extensively drug-resistant tuberculosis (XDR-TB)?
- Pyrazinamide
 - Linezolid
 - Streptomycin
 - Isoniazid
- 92** Which is NOT an expected adverse effect of rifampin?
- Nephrotoxicity
 - Red colouration of secretions
 - Flu-like syndrome
 - Skin rash and fever
- 93** Which statement about isoniazid is WRONG?
- It is metabolised in the liver by acetylation
 - It decreases the serum level of phenytoin
 - Adding pyridoxine decreases the risk of convulsions
 - The risk of hepatitis increases in patients taking rifampin
- 94** Which statement about the rifamycins is INCORRECT?
- Rifabutin is a weaker enzyme inducer than rifampin
 - Rifampin has an antiviral effect
 - Rifabutin is preferred in TB patients with HIV
 - Rifapentine has a shorter duration of action than rifampin
- 95** Which antituberculous drug does NOT cause hepatic toxicity?
- Pyrazinamide
 - Rifampin
 - Ethambutol
 - Isoniazid
- 96** Which drug is NOT correctly matched with its adverse effect?
- Ethambutol / colour blindness and hyperuricaemia
 - Isoniazid / enzyme inhibitor and neurotoxicity
 - Pyrazinamide / optic neuritis and hyperuricaemia
 - Rifampin / enzyme inducer and cholestatic jaundice
- 97** A woman on TB therapy is warned that one of her drugs will lower the plasma level of her oral contraceptive. Which drug?
- Ethambutol
 - Pyrazinamide
 - Isoniazid
 - Rifampicin
- 98** All the following statements about rifampicin are true EXCEPT:
- It may reduce the plasma level of other drugs
 - Vitamin B6 decreases its side effects
 - It inhibits DNA-dependent RNA polymerase
 - It gives red discolouration of urine
- 99** Why is combination therapy required in tuberculosis?
- Resistance develops with monotherapy
 - To shorten treatment to two weeks
 - Because single drugs are bacteriostatic
 - To avoid the need for direct observation
- 100** Direct observation therapy (DOT) is used in TB mainly to:
- Ensure completion of therapy despite poor compliance
 - Allow once-weekly dosing
 - Reduce the dose needed
 - Prevent hepatotoxicity
- 101** The initial intensive phase of TB treatment consists of:
- Two drugs for 6 months
 - Two drugs for 2 months
 - Four drugs for 4 months
 - Four drugs for 2 months
- 102** MDR-TB is defined as resistance to:
- All first-line drugs
 - Isoniazid alone
 - Rifampicin and isoniazid
 - A fluoroquinolone plus an injectable second-line drug

103 Isoniazid acts by:

- a) Inhibiting synthesis of mycolic acid in the mycobacterial cell wall
- b) Targeting fatty acid synthase-1
- c) Inhibiting RNA synthesis as a bacteriostatic
- d) Inhibiting DNA-dependent RNA polymerase

104 Neurotoxicity from isoniazid occurs mainly in:

- a) Rapid acetylators
- b) Slow acetylators
- c) Children only
- d) Patients on rifampicin

105 Why does isoniazid cause pyridoxine deficiency?

- a) Its metabolites inhibit pyridoxine phosphokinase, blocking activation of vitamin B6
- b) It increases renal excretion of pyridoxine
- c) It destroys gut flora that synthesise B6
- d) It binds pyridoxine in the gut

106 Which drug crosses into the CSF and is therefore valuable in tuberculous meningitis?

- a) Streptomycin
- b) Clofazimine
- c) Ethambutol
- d) Pyrazinamide

107 Which first-line antituberculous drug is BACTERIOSTATIC?

- a) Rifampicin
- b) Pyrazinamide
- c) Isoniazid
- d) Ethambutol

108 Rifabutin is preferred over rifampin in TB patients with HIV because it:

- a) Does not discolour urine
- b) Has a longer half-life
- c) Is bacteriostatic
- d) Causes less enzyme induction and so fewer drug interactions

109 Patient monitoring during TB therapy includes clinical evaluation, monthly culture and watching especially for toxicity of which organ?

- a) Thyroid
- b) Liver
- c) Bone marrow
- d) Kidney

PHARYNGITIS

Questions 110–117

- 110** The first choice in acute bacterial pharyngitis is:
- a) Clindamycin
 - b) Amoxicillin/clavulanate
 - c) Cephalexin
 - d) Penicillin V
- 111** In a patient with pharyngitis and type I penicillin allergy, azithromycin is given for:
- a) 7 days
 - b) 10 days
 - c) 3 days
 - d) 5 days
- 112** A 9-year-old has acute sore throat, fever and headache, with a positive rapid antigen test for group A streptococcus and no drug allergy. Which regimen treats the infection and prevents acute rheumatic fever?
- a) Cefdinir for 7 days
 - b) Amoxicillin/clavulanate for 10 days
 - c) Amoxicillin for 10 days
 - d) Azithromycin for 5 days
- 113** A 7-year-old with bacterial pharyngitis has a history of amoxicillin causing throat swelling and difficulty breathing. Which is appropriate?
- a) Benzathine penicillin as a single IM dose
 - b) Cephalexin for 10 days
 - c) Penicillin V for 10 days
 - d) Azithromycin for 5 days
- 114** In pharyngitis without allergy, a single intramuscular dose of benzathine penicillin is:
- a) 5 million units
 - b) 2.4 million units
 - c) 1.2 million units
 - d) 600,000 units
- 115** Antibiotic therapy in GABHS pharyngitis shortens the infectious period from:
- a) 14 days to 5 days
 - b) 5 days to 1 day
 - c) 7 days to 3 days
 - d) 10 days to 2 days
- 116** Which is a NON-suppurative complication of streptococcal pharyngitis?
- a) Otitis media
 - b) Sinusitis
 - c) Acute rheumatic fever
 - d) Peritonsillar abscess
- 117** In non-type I penicillin allergy with pharyngitis, which is used?
- a) A first generation cephalosporin such as cephalexin
 - b) Doxycycline
 - c) Moxifloxacin
 - d) A third generation cephalosporin for 10 days

OTITIS MEDIA

Questions 118–133

- 118** The first choice in acute, NOT severe otitis media without penicillin allergy is:
- Amoxicillin/clavulanate (Augmentin) in high dose
 - Clindamycin oral
 - Ceftriaxone IV
 - Amoxicillin oral in high dose
- 119** The first choice in acute SEVERE otitis media is:
- Ceftriaxone oral
 - Amoxicillin/clavulanate (Augmentin) in high dose
 - Clindamycin oral
 - Amoxicillin oral in high dose
- 120** The first choice in acute severe otitis media with TYPE I penicillin allergy is:
- Azithromycin
 - Cefuroxime
 - Clindamycin
 - Amoxicillin
- 121** Ceftriaxone for severe otitis media should not exceed:
- 5 days
 - 7 days
 - 10 days
 - 3 days
- 122** Ibuprofen used for pain in otitis media should not be given for more than:
- 10 days
 - 5 days
 - 7 days
 - 3 days
- 123** Azithromycin in NOT severe otitis media is given for:
- 10 days
 - 3 days
 - 5 days
 - 7 days
- 124** Ceftriaxone IV or IM may be used in otitis media that is:
- Any otitis media with effusion
 - Severe, with type I penicillin allergy only
 - Severe, with no penicillin allergy or with non-type I allergy
 - Not severe, with no allergy
- 125** Oral cefuroxime may be used in otitis media that is:
- Any case with type I allergy
 - Otitis media with effusion
 - Not severe, with no penicillin allergy or with non-type I allergy
 - Severe, with type I allergy
- 126** Clindamycin could be used in otitis media that is:
- Any case in a neonate
 - Severe with type I penicillin allergy, or severe with failure of therapy
 - Not severe with no allergy
 - Otitis media with effusion
- 127** Which type of otitis media does NOT need antibiotic therapy?
- Otitis media with effusion (OME)
 - Severe AOM in a child under 2 years
 - AOM with fever
 - Acute otitis media (AOM)
- 128** Which organisms causing otitis media are penicillin-resistant through β -lactamase production?
- Pseudomonas and Klebsiella
 - Group A streptococci and S. aureus
 - Mycoplasma and Chlamydia
 - S. pneumoniae and H. influenzae
- 129** A topical anaesthetic such as benzocaine for ear pain should NOT be used in children under:
- 2 years
 - 12 years
 - 6 months
 - 5 years
- 130** Which adjunctive treatments are NOT proven effective in otitis media?
- Paracetamol
 - Ibuprofen
 - Decongestants, antihistamines, topical corticosteroids and expectorants
 - Topical anaesthetics
- 131** Ceftriaxone should be avoided in infants under:
- 2 months
 - 2 years
 - 1 year
 - 6 months

- 132** An 18-month-old girl has two days of rhinorrhoea, then irritability, fever of 38.5°C and right-ear tugging, and is diagnosed with acute otitis media. She has no known allergy. Which is the first choice?
- a) Clindamycin for 10 days
 - b) Ceftriaxone IM for 3 days
 - c) Azithromycin for 3 days
 - d) High-dose amoxicillin/clavulanate for 10 days
- 133** Which antibiotic is NOT an option for acute otitis media in a 1-month-old infant?
- a) Paracetamol for pain
 - b) Amoxicillin/clavulanate
 - c) Cefuroxime
 - d) Ceftriaxone

SINUSITIS

Questions 134–141

134 Which antibiotic is NOT recommended in acute bacterial rhinosinusitis in a 6-year-old child?

- a) Ceftriaxone
- b) Doxycycline
- c) Amoxicillin/clavulanate
- d) Clindamycin

135 A 7-year-old has uncomplicated acute bacterial sinusitis with 12 days of purulent nasal discharge and daytime cough, and no drug allergy. The recommended first-line oral regimen is:

- a) Azithromycin
- b) Trimethoprim-sulfamethoxazole
- c) A first generation cephalosporin
- d) High-dose amoxicillin/clavulanate

136 Antibiotics are indicated in acute bacterial rhinosinusitis when symptoms are moderate or severe and persist for more than:

- a) 3 days
- b) 10 days
- c) 21 days
- d) 5 days

137 Intranasal decongestants in sinusitis are limited to 3 days to avoid:

- a) Rhinitis sicca
- b) Nasal septal perforation
- c) Anosmia
- d) Rebound nasal congestion

138 Which antihistamines should NOT be used in acute bacterial sinusitis?

- a) Second generation agents, because they are sedating
- b) All antihistamines, in every form of sinusitis
- c) Only intranasal antihistamines
- d) First generation agents, because their atropine-like action thickens secretions

139 In an ADULT with acute bacterial rhinosinusitis and type I penicillin allergy, which is appropriate?

- a) Doxycycline or a respiratory quinolone
- b) Penicillin V
- c) Amoxicillin/clavulanate
- d) Cefixime

140 Which is NOT an option for acute bacterial sinusitis in an adult?

- a) Doxycycline
- b) Penicillin V
- c) Amoxicillin/clavulanate
- d) Moxifloxacin

141 Organisms causing sinusitis are those of otitis media PLUS:

- a) Mycobacteria
- b) Legionella
- c) Anaerobes
- d) Pseudomonas

LOWER RESPIRATORY TRACT INFECTION

Questions 142–149

- 142** Antibiotics in acute bronchitis are indicated only when fever or respiratory symptoms persist beyond:
- a) 14 days
 - b) 24 hours
 - c) 4–6 days, or in predisposed patients
 - d) 2 days
- 143** A 25-year-old has a persistent cough for 5 days with mild fever and chest discomfort, scattered wheezes and no signs of pneumonia. Which statement about his acute bronchitis is TRUE?
- a) Corticosteroids are the main drug therapy
 - b) Bacteria are the common causative agent
 - c) Ribavirin should be given as an aerosol
 - d) Azithromycin could be given if bacterial infection is suspected
- 144** A 10-month-old infant has two days of cough, nasal congestion and increasing difficulty breathing, and is diagnosed with bronchiolitis. Which treatment is appropriate?
- a) Ribavirin aerosol
 - b) Corticosteroids as the main therapy
 - c) Doxycycline
 - d) Levofloxacin for 5 days
- 145** In hospitalised children with bronchiolitis, which nebulised drug does the booklet call more effective than albuterol?
- a) Ipratropium
 - b) Epinephrine
 - c) Cromolyn
 - d) Budesonide
- 146** Chronic bronchitis is defined as a productive cough with sputum lasting:
- a) More than 6 months continuously
 - b) More than 2 weeks in a single episode
 - c) More than 3 consecutive months a year for 2 consecutive years
 - d) More than 1 month a year for 3 years
- 147** Which organism is NOT a common pathogen in chronic bronchitis?
- a) M. catarrhalis
 - b) Pseudomonas aeruginosa
 - c) H. influenzae
 - d) S. pneumoniae
- 148** Duration of antibiotic therapy in chronic bronchitis is:
- a) 21 days
 - b) 3 days
 - c) 10–14 days
 - d) 5–7 days
- 149** Which is NOT an indication for antibiotics in chronic bronchitis?
- a) Mild symptoms in a young patient with no risk factors
 - b) Moderate to severe symptoms
 - c) Home oxygen use
 - d) Old age

PNEUMONIA

Questions 150–177

150 IV ceftazidime combined with ciprofloxacin is used in:

- a) Adult pneumonia in ICU with no Pseudomonas
- b) Adult pneumonia outpatient
- c) Adult pneumonia inpatient, non-ICU
- d) None of the above — it is the regimen for ICU pneumonia WITH Pseudomonas

151 An IV aminoglycoside combined with IV azithromycin is used in:

- a) Adult pneumonia inpatient, non-ICU
- b) Adult pneumonia inpatient admitted to ICU with Pseudomonas
- c) Adult pneumonia outpatient
- d) None of the above

152 IV meropenem combined with levofloxacin is used in:

- a) Adult pneumonia inpatient, non-ICU
- b) Adult pneumonia outpatient
- c) Adult pneumonia outpatient with Pseudomonas
- d) None of the above — it is an inpatient ICU antipseudomonal regimen

153 IV ceftriaxone combined with azithromycin is used in:

- a) Adult pneumonia outpatient with comorbidity
- b) Adult pneumonia in ICU with Pseudomonas
- c) None of the above
- d) Adult pneumonia inpatient, non-ICU

154 Oral cefuroxime combined with azithromycin is used in:

- a) Adult pneumonia outpatient with comorbidity
- b) Adult pneumonia inpatient, non-ICU
- c) Adult pneumonia in ICU with no Pseudomonas
- d) None of the above

155 In adult pneumonia with suspected ORSA, all of the following could be added EXCEPT:

- a) A streptogramin
- b) Daptomycin
- c) Linezolid
- d) Vancomycin

156 In suspected ORSA, empiric therapy of pneumonia should include:

- a) Vancomycin or linezolid
- b) Daptomycin or vancomycin
- c) Daptomycin
- d) Azithromycin alone

157 An adult inpatient with pneumonia and no complications can be discharged within:

- a) 5 days
- b) 10 days
- c) 7 days
- d) 3 days

158 Adult pneumonia treatment duration with a NEGATIVE blood culture is:

- a) 7–14 days
- b) 5–7 days
- c) 7–10 days
- d) 14–21 days

159 Duration of therapy for pneumonia with a POSITIVE blood culture is:

- a) 7 days from the day the culture is positive
- b) 7 days from the day the culture becomes negative
- c) 14 days from the day the culture is positive
- d) 14 days from the day the blood culture becomes negative

160 Which statement about pneumonia therapy is WRONG?

- a) Vancomycin is added if ORSA is suspected in an adult inpatient
- b) Daptomycin should be added to meropenem when Pseudomonas is suspected
- c) Combination therapy is recommended when Pseudomonas is suspected
- d) Levofloxacin is used for 5 days in an adult outpatient without comorbidity

161 An adult has pneumonia with no other disease and no antibiotic exposure. Which is suitable?

- a) Ceftriaxone plus azithromycin IV
- b) Amoxicillin/clavulanate for 5 days
- c) Azithromycin for 5 days, or doxycycline for 7–10 days
- d) Levofloxacin for 10 days

162 An adult with no other disease had azithromycin one month ago and now has pneumonia. Which is suitable?

- a) Azithromycin for 5 days
- b) Levofloxacin for 10 days
- c) Augmentin for 5 days
- d) Doxycycline for 7–10 days

- 163** A 50-year-old with congestive heart failure is treated as an outpatient for pneumonia and had erythromycin a month ago. Which is appropriate?
- Levofloxacin for 10 days
 - Levofloxacin for 5 days
 - Amoxicillin for 7–10 days
 - Azithromycin for 5 days
- 164** A 60-year-old with cancer is treated as an outpatient for pneumonia, having had erythromycin two months ago. Which is appropriate?
- Cefuroxime for 7–10 days
 - Amoxicillin for 7–10 days
 - Levofloxacin for 5 days
 - Azithromycin for 5 days
- 165** Which regimen is most appropriate for severe late-onset nosocomial pneumonia with suspected *Pseudomonas* AND ORSA?
- Meropenem plus levofloxacin plus vancomycin
 - Meropenem plus amikacin
 - Levofloxacin alone
 - Meropenem alone
- 166** When *Pseudomonas* is suspected in a 45-year-old ICU patient, which single choice is adequate?
- Ciprofloxacin alone
 - Ceftazidime plus levofloxacin
 - Meropenem alone
 - Piperacillin/tazobactam alone
- 167** Conversion from IV to oral therapy in pneumonia requires all the following EXCEPT:
- Improved and stable oxygenation
 - A negative blood culture on the day of conversion
 - Tolerating oral therapy with a normally functioning GIT
 - Stable vital signs for 24 hours
- 168** Which is the MOST common bacterial pathogen in community acquired pneumonia?
- Mycoplasma pneumoniae*
 - Haemophilus influenzae*
 - Streptococcus pneumoniae*
 - Moraxella catarrhalis*
- 169** In the CURB-65 score, which value of blood urea nitrogen scores a point?
- More than 3 mmol/l
 - More than 15 mmol/l
 - More than 7 mmol/l (19 mg/dl)
 - Any value above normal
- 170** A CURB-65 score of 3–5 means the patient:
- Can be discharged with oral antibiotics
 - Requires hospitalisation, with consideration of ICU admission
 - Is treated as an outpatient
 - Needs a short stay in hospital or close outpatient watching
- 171** Hospital acquired pneumonia is defined as pneumonia occurring:
- At any time in a hospitalised patient
 - Within 24 hours of admission
 - More than 48 hours after admission
 - 48–72 hours after intubation
- 172** Which pathogens are characteristic of aspiration pneumonia?
- Oral anaerobes and *Streptococcus viridans*, or enteric Gram-negative bacilli
 - MRSA only
 - Pseudomonas* and fungi
 - Mycoplasma* and *Chlamydia*
- 173** Pneumonia in a neutropenic patient is characteristically caused by:
- Staphylococcus*, *Pseudomonas* and fungi
 - Respiratory syncytial virus
 - Anaerobes only
 - Mycoplasma* and *Legionella*
- 174** The first priority in managing a patient with pneumonia is:
- Selecting the best antimicrobial
 - Calculating the CURB-65 score
 - Evaluating the adequacy of respiratory function
 - Obtaining a blood culture
- 175** A patient with pneumonia, no comorbidity and no recent antibiotics should start on:
- Vancomycin plus meropenem
 - Combination β -lactam plus macrolide
 - Monotherapy with azithromycin, doxycycline or a respiratory fluoroquinolone
 - An antipseudomonal β -lactam
- 176** A patient with comorbidities who had antibiotics within the last 3 months should be given:
- Exactly the regimen used 3 months ago
 - The same options as a patient with comorbidities, but from a different antibiotic class
 - No antibiotic until culture results return
 - Monotherapy with azithromycin

177 Azithromycin and levofloxacin courses in an adult outpatient with pneumonia last:

- a) 3 days
- b) 10 days
- c) 14 days
- d) 5 days, against the usual 7–10 days

DIPHTHERIA

Questions 178–182

178 The role of diphtheria antitoxic serum is to:

- a) Prevent secondary bacterial infection
- b) Neutralise the toxin before it binds irreversibly
- c) Provide active immunity
- d) Kill *C. diphtheriae* in the throat

179 Before giving diphtheria antitoxic serum it is essential to:

- a) Give a loading dose of penicillin
- b) Check liver function
- c) Perform a tuberculin test
- d) Perform a sensitivity test to horse serum

180 In diphtheria, penicillin or erythromycin is given to:

- a) Neutralise circulating toxin
- b) Replace the need for antitoxin
- c) Reduce the number of bacilli in the throat and so toxin production
- d) Prevent myocarditis directly

181 Management of contacts of a diphtheria case includes:

- a) A single IM dose of penicillin, plus toxoid vaccine if not fully vaccinated
- b) Tracheostomy
- c) No action unless symptomatic
- d) Antitoxic serum for all contacts

182 Tracheostomy in diphtheria is indicated in cases of:

- a) Suffocation
- b) Myocarditis
- c) Neuritis
- d) Renal failure

ANSWER KEY & EXPLANATIONS

Bronchial Asthma — Definition, Types & Pathogenesis

1	2	3	4	5	6	7	8	9	10
A	B	A	D	C	C	C	B	C	B
11	12	13	14	15	16	17	18	19	20
A	C	B	B	D	C	C	A	A	C
21	22								
D	A								

1. A — The booklet defines asthma as a chronic inflammatory disease with reversible bronchospasm and bronchial hyper-reactivity to triggers.

2. B — Allergic (atopic) asthma shows a positive serum IgE and is a type I hypersensitivity reaction, appearing early in childhood.

3. A — Allergic type II asthma follows a type I hypersensitivity reaction, with IgE bound to mast cells.

4. D — Persistent asthma is graded mild, moderate or severe; severe persistent means continuous symptoms despite treatment.

5. C — High altitude is not listed among the triggers in the booklet; pollen, exercise and infection are.

6. C — Salbutamol (albuterol) is a selective β_2 agonist used as a SABA. Ipratropium and tiotropium are antimuscarinics and theophylline is a methylxanthine.

7. C — Tremor is the most common adverse effect of β_2 agonists. Gastric irritation belongs to theophylline, candidiasis to inhaled corticosteroids and growth retardation to systemic steroids.

8. B — At step 3 the preferred controller is low dose maintenance ICS-formoterol, with low dose maintenance ICS-LABA as the alternative.

9. C — An ICS alone is a long-term controller. The as-needed relievers are low dose ICS-formoterol or a SABA; short acting theophylline may also be used as a short-term reliever.

10. B — Physical activity belongs to non-pharmacological control between attacks, not to the management of an emergency.

11. A — IL-4 activates B cells, which change into plasma cells secreting IgE. IL-5 activates eosinophils and IL-13 increases mucus secretion.

12. C — IL-5 binds its receptors on eosinophils, activating them and increasing their survival time.

13. B — The early phase occurs within 30–60 minutes; the late phase within 2 to 7 hours.

14. B — Tissue damage activates the arachidonic acid pathway, producing PGs and LTs that cause bronchospasm, increased vascular permeability and chemoattraction of eosinophils.

15. D — The booklet contrasts type II asthma — more severe, systemic eosinophilia, corticosteroid responsive — with non-type II asthma, which is less severe and without systemic eosinophilia.

16. C — Classification depends on the number of bronchoconstrictor episodes, night-time symptoms and peak expiratory flow.

17. C — The non-pharmacological measures listed are smoking cessation, physical activity and avoiding NSAIDs.

18. A — Leukotriene pathway inhibitors are first choice in aspirin-induced asthma.

19. A — Antimuscarinics are the bronchodilator of choice in asthma due to psychogenic stimulus or β blockers, and in patients intolerant to other bronchodilators — especially thyrotoxic, elderly and cardiac patients.

20. C — A short acting β_2 agonist is given 10 minutes before exercise; a LABA is given 1 hour before.

21. D — Tiotropium is long acting, produces no tolerance and is used as maintenance therapy in COPD.

22. A — SR theophylline produces less fluctuation in plasma level and is taken once a day, which suits nocturnal asthma.

Bronchodilator Drugs

23	24	25	26	27	28	29	30	31	32
A	C	C	D	A	D	B	A	C	D

33	34
D	B

23. A — β_2 stimulation raises cAMP, giving bronchodilation, reduced release of mast cell mediators and increased mucociliary clearance.

24. C — They increase mucociliary clearance and decrease the release of mast cell mediators and cytokines.

25. C — LABA has a bronchodilator effect far greater than its anti-inflammatory effect, so alone it masks progression of the disease and increases the risk of mortality.

26. D — LABA increases nuclear localisation of the steroid receptor, improving asthma control.

27. A — β_2 agonists cause tremor, tolerance, tachycardia at high concentration, hypokalaemia with muscle cramps, and hypoxaemia.

28. D — Hypoxaemia occurs because vasodilatation exceeds bronchodilatation, worsening the V/Q ratio and lowering blood oxygenation.

29. B — Tolerance results from down-regulation of β_2 receptors. Corticosteroids reduce it by decreasing that down-regulation.

30. A — They block M_3 receptors in bronchial muscles, giving bronchodilation and reduced vagally mediated mucus secretion.

31. C — Ipratropium is non-selective: blocking presynaptic M_2 increases ACh release, so tolerance develops. Tiotropium is a selective M_3 antagonist and produces no tolerance.

32. D — Antimuscarinics have a delayed onset and are less effective than β_2 agonists, and they produce tolerance through presynaptic M_2 blockade.

33. D — Epinephrine is shorter acting and non-selective, risking tachycardia, arrhythmia and hypertension, but is still used in acute bronchospasm, especially anaphylaxis.

34. B — Oral LABAs such as SR salbutamol, SR terbutaline and bambuterol (a prodrug of terbutaline) may be used as controllers when extra bronchodilation is needed.

Methylxanthines

35	36	37	38	39	40	41	42	43	44
C	B	B	A	C	D	C	B	A	B

45
D

35. C — Theophylline inhibits phosphodiesterase, increasing cAMP, and blocks A_2 receptors — both give bronchodilation, with a modest anti-inflammatory effect.

36. B — Saturation kinetics plus a narrow safety margin make the risk of toxicity high, so plasma levels need monitoring.

37. B — The contraindications listed are peptic ulcer, ischaemic heart disease and epilepsy.

38. A — Enzyme inhibitors such as erythromycin, oral contraceptives, ciprofloxacin, zileuton and zafirlukast raise the level. Rifampicin, phenobarbitone, phenytoin, carbamazepine, smoking and heavy drinking lower it.

39. C — Children, heavy smokers and heavy drinkers clear theophylline faster. Extremes of age, hepatic and heart disease and viral infections slow clearance.

40. D — Aminophylline must be given slowly intravenously, as rapid injection can cause cardiac arrest.

41. C — On skeletal muscle it increases contractility and reverses diaphragmatic fatigue in COPD, reducing dyspnoea.

42. B — Methylxanthines are respiratory stimulants; caffeine is used in neonatal apnoea.

43. A — Low dose theophylline gives the full anti-inflammatory effect with fewer side effects and no need to monitor the plasma level.

44. B — Among its advantages is that it can be given by many routes — except inhalation.

45. D — Theophylline is stimulatory to the GIT, increasing HCl and causing gastric irritation, so it is given with meals and avoided in peptic ulcer.

Anti-inflammatory & Biologic Therapy

46	47	48	49	50	51	52	53	54	55
B	D	C	D	B	B	D	B	D	B

56	57	58	59	60	61	62	63
A	B	D	A	D	D	D	C

46. B — They inhibit PLA₂ and cytokines, reducing mediator release and influx of inflammatory cells, so inflammation, hyper-reactivity and recurrence all fall.

47. D — By decreasing down-regulation of the receptors they reduce tolerance to β_2 agonists.

48. C — Oral rescue steroid is given for 7 days at most in an exacerbation not responding to β_2 agonists.

49. D — Gargling and spitting after inhalation and using a spacer device reduce local adverse effects; the others listed are hoarseness of voice and candidiasis.

50. B — Ciclesonide is activated by bronchial esterases and has high first-pass metabolism and high plasma protein binding, so fewer systemic side effects.

51. B — The systemic effects listed are osteoporosis, growth retardation, diabetes, adrenal suppression, cataract and glaucoma, hypertension, Cushing syndrome and hypokalaemia.

52. D — Zileuton inhibits 5-lipoxygenase, reducing leukotriene synthesis. It is not commonly used because of hepatic toxicity.

53. B — Both are LT receptor antagonists, giving bronchodilation plus an anti-inflammatory effect.

54. D — Their advantages are oral therapy (easier than inhalation, especially in children), long duration of action and minimal side effects.

55. B — Zafirlukast is an enzyme inhibitor, and both zafirlukast and zileuton raise liver enzymes.

56. A — They are weak anti-inflammatories that inhibit mast cell degranulation, reducing the early response, and inhibit eosinophil activation, reducing the late response.

57. B — Cromolyn is prophylactic, used by inhalation in antigenic and exercise-induced asthma and in mild persistent asthma with an ICS — never in an acute attack, and never alone.

58. D — The booklet advises prior inhalation of a β_2 agonist to avoid these effects with the powder form.

59. A — Omalizumab is a humanised monoclonal antibody that binds circulating IgE, inhibiting its binding to mast cells. It is add-on therapy in severe uncontrolled allergic asthma.

60. D — Dupilumab is anti-IL-4; its uses are the same as the anti-IL-5 agents plus atopic dermatitis, and it may cause blood eosinophilia.

61. D — Mepolizumab and reslizumab are anti-IL-5; benralizumab binds the IL-5 receptor (anti-IL-5R).

62. D — Omalizumab carries an increased risk of anaphylaxis along with reactions at the injection site.

63. C — Ketotifen is related to cromolyn: a mast cell stabiliser with antihistamine activity.

Acute Exacerbation & Status Asthmaticus

64	65	66	67	68	69
A	C	B	A	B	A

64. A — Mild or moderate acute exacerbation is treated with inhaled SABA, oral prednisone 40–50 mg and oxygen at 95%.

65. C — The booklet attributes refractoriness to DOWN-regulation of β receptors, mucus plugging and acidosis.

66. B — Sedatives are avoided because of respiratory depression.

67. A — IV aminophylline is used in severe cases and must be infused slowly to avoid cardiac arrest.

68. B — Hospital measures are endotracheal intubation and suction, humidified oxygen, IV fluids for dehydration, electrolytes and acidosis, and antibiotics for infection.

69. A — The booklet notes that salbutamol can be given IV in mild or moderate acute exacerbation.

Drug Therapy of Cough									
70	71	72	73	74	75	76	77	78	79
B	A	D	D	A	C	B	D	C	D
80	81	82	83	84	85	86	87	88	
B	C	A	B	D	C	D	B	D	

70. B — Menthol (a volatile oil) acts both as a peripheral antitussive demulcent and as an expectorant. Guaifenesin is an expectorant, acetylcysteine a mucolytic and dextromethorphan a central antitussive.

71. A — Cough results from stimulation of irritant receptors in the respiratory passages or outside them, and the reflex is controlled by the cough centre in the medulla.

72. D — The booklet lists the oesophagus, heart and ears as extra-respiratory sources of cough.

73. D — Central antitussives act on the cough centre in the medulla and are used in moderate to severe dry cough. Productive cough is treated with mucolytics and expectorants.

74. A — Dextromethorphan is listed as first choice; it crosses the blood-brain barrier and acts as a σ_1 agonist and NMDA antagonist on the cough centre.

75. C — Codeine causes drowsiness in adults but paradoxical excitement in children.

76. B — In antitussive doses it has less liability to constipation, respiratory depression and dependence. Its own serious adverse effect is hallucination.

77. D — Pholcodine is a semisynthetic opioid with fewer adverse effects than codeine, but causes sputum retention.

78. C — They are H_1 antagonists that suppress the central cough mechanism and raise the threshold for the afferent cough impulse; their adverse effects are anticholinergic.

79. D — Volatile oil acts as a demulcent, protecting irritant receptors with a mucin layer; it is used in lozenges or hot steam for mild to moderate dry cough.

80. B — The booklet lists seizure, coma and death as the serious adverse effects of volatile oil (menthol).

81. C — They break the disulfide bonds of thick mucus and also act as antioxidant and anti-inflammatory. Ambroxol and bromhexine break down acid mucopolysaccharide fibres.

82. A — Among the therapeutic uses of mucolytics the booklet lists acetylcysteine as the antidote in paracetamol toxicity.

83. B — Ambroxol, and bromhexine by the same mechanism, break down acid mucopolysaccharide fibres, promoting clearance.

84. D — Bromhexine shares ambroxol's mechanism; its adverse effect is GIT upset with pain in the upper part of the stomach. Acetylcysteine causes angioedema, pruritus and peripheral oedema.

85. C — It increases volume and decreases viscosity, letting ciliary movement carry secretions upwards.

86. D — The booklet contraindicates dextromethorphan, pholcodine, antihistamines such as diphenhydramine, doxylamine and promethazine, guaifenesin, pseudoephedrine and phenylephrine in children.

87. B — Specific treatment targets the cause: bronchodilators (β_2 agonists, theophylline) and decongestants such as ephedrine, pseudoephedrine and phenylephrine.

88. D — Mucolytic uses are productive cough, asthmatic bronchitis, COPD, cystic fibrosis, bronchiectasis and care of a tracheostomy tube. A dry cough calls for an antitussive.

Pulmonary Tuberculosis									
89	90	91	92	93	94	95	96	97	98
D	C	B	A	B	D	C	C	D	B
99	100	101	102	103	104	105	106	107	108
A	A	D	C	A	B	A	D	D	D
109									
B									

89. D — First-line drugs are rifampicin, isoniazid, pyrazinamide, ethambutol and streptomycin. Linezolid is reserved for extensively drug-resistant TB.

90. C — Latent TB is treated with isoniazid monotherapy for 9 months, or a combination of INH and rifapentine for 3 months.

91. B — For XDR-TB the booklet lists clofazimine and linezolid.

92. A — Rifampin causes rash, fever, GIT upset, liver damage and jaundice, enzyme induction, flu-like syndrome and red discolouration of urine, tears and sputum — not nephrotoxicity.

93. B — INH is an enzyme INHIBITOR, so it increases phenytoin and carbamazepine levels rather than decreasing them.

94. D — Rifapentine has a LONGER half-life, allowing once-weekly dosing and better compliance.

95. C — Ethambutol's adverse effects are ocular — optic neuritis, red/green colour blindness, reduced visual acuity — plus reduced uric acid excretion.

96. C — Optic neuritis belongs to ethambutol. Pyrazinamide causes hepatitis, hyperuricaemia, arthralgia and GIT upset.

97. D — Rifampicin is a potent enzyme inducer, causing serious drug interactions including failure of oral contraceptives.

98. B — Pyridoxine (vitamin B6) is added to ISONIAZID to prevent neurotoxicity, not to rifampicin.

99. A — The booklet's first listed problem is that resistance occurs with monotherapy, so combination therapy is required.

100. A — Poor compliance with multidrug therapy over a long period is the third listed problem; DOT ensures therapy is completed.

101. D — Rifampicin, INH, pyrazinamide and ethambutol (or streptomycin) for 2 months, to lower the bacillary load and avoid resistance. The continuation phase is INH and rifampicin for 4 months.

102. C — MDR-TB is resistance to rifampicin and INH. XDR-TB is MDR plus resistance to a fluoroquinolone and at least one injectable second-line drug.

103. A — INH affects the enzyme responsible for mycolic acid synthesis, disrupting the cell wall, and acts both intracellularly and extracellularly.

104. B — Neurotoxicity — neuritis, memory impairment and convulsions from B6 deficiency — occurs with slow acetylators; hepatitis is commoner with rapid acetylators.

105. A — INH metabolites inhibit pyridoxine phosphokinase, which converts B6 to its active form needed for GABA synthesis; the result is CNS stimulation.

106. D — Pyrazinamide is highly lipophilic, crosses the blood-brain barrier and penetrates CSF, making it valuable in tuberculous meningitis.

107. D — In the mega summary ethambutol is listed as static; rifampicin, INH and pyrazinamide are cidal.

108. D — Rifabutin produces less enzyme induction, reducing interactions with antiretroviral drugs.

109. B — The booklet specifies watching for drug side effects, especially liver.

Pharyngitis

110	111	112	113	114	115	116	117
D	D	C	D	C	D	C	A

110. D — Penicillin is first choice — effective, narrow spectrum, safe and low cost. Penicillin V is the oral form; amoxicillin is preferred in children for its better taste.

111. D — Type I penicillin allergy: azithromycin for 5 days, or clindamycin for 10 days.

112. C — Penicillin or amoxicillin for a full 10 days is needed to prevent the non-suppurative complications; amoxicillin suits children because of its taste.

113. D — Throat swelling and difficulty breathing indicate a type I reaction, so all β -lactams including cephalosporins are avoided; the booklet gives azithromycin for 5 days or clindamycin for 10 days.

114. C — The booklet gives benzathine penicillin as a single IM dose of 1.2 MU.

115. D — Antibiotic therapy reduces the infectious period from 10 days to 2 days; children stay home until afebrile and for the first 24 hours of treatment.

116. C — Non-suppurative complications are acute rheumatic fever (up to 7 days to occur) and acute glomerulonephritis; the suppurative ones are peritonsillar abscess, otitis media and sinusitis.

117. A — A first generation cephalosporin (cephalexin, cefadroxil) is used; the booklet warns against 2nd or 3rd generation agents for 10 days.

Otitis Media

118	119	120	121	122	123	124	125	126	127
A	B	C	D	D	B	C	C	B	A

128	129	130	131	132	133
D	A	C	A	D	D

118. A — The booklet names high-dose amoxicillin/clavulanate the drug of choice for 10 days — very effective, high middle ear concentration, safe, low cost and good taste for children.

119. B — For severe AOM the first choice is high-dose amoxicillin/clavulanate; ceftriaxone IV or IM for 1–3 days is used where there are oral problems.

120. C — Type I penicillin allergy: not severe is treated with a macrolide, severe with clindamycin.

121. D — Standard oral therapy runs 10 days, with exceptions: azithromycin 3 days and ceftriaxone 3 days.

122. D — Acetaminophen or ibuprofen is used with fever, but ibuprofen is not preferred in children under 3 months and not for more than 3 days.

123. B — For type I penicillin allergy that is not severe, a macrolide such as azithromycin is given once daily for 3 days, separated from antacids.

124. C — Ceftriaxone is used for severe AOM without allergy and for severe AOM with non-type I penicillin allergy.

125. C — Cefuroxime, a 2nd generation cephalosporin, is used for not-severe AOM without allergy and for not-severe AOM with non-type I penicillin allergy, for 10 days.

126. B — Clindamycin is the choice for severe acute otitis media with type I penicillin allergy, and it is also used when first-line therapy has failed.

127. A — Acute otitis media needs antibiotics; otitis media with effusion does not.

128. D — The causes are viral, *S. pneumoniae* and *H. influenzae* — the latter two may produce β -lactamase.

129. A — Without fever and in mild cases a topical anaesthetic may be used, but not in children under 2 years.

130. C — The booklet states these have not been proved effective.

131. A — The booklet warns to avoid ceftriaxone in patients under 2 months.

132. D — With no allergy, high-dose amoxicillin/clavulanate is the drug of choice for 10 days.

133. D — Ceftriaxone is avoided under 2 months of age.

Sinusitis

134	135	136	137	138	139	140	141
B	D	B	D	D	A	B	C

134. B — Doxycycline is contraindicated in children; in children the first choice is amoxicillin/clavulanate.

135. D — In children the first choice is amoxicillin/clavulanate, in high dose where there is a risk of pneumococcal resistance.

136. B — The indication is persistent severe ABRS with moderate or severe symptoms for more than 10 days; duration of therapy is 10–14 days, up to 21.

137. D — They are used for 3 days only, in severe cases and in patients over 6 years, to avoid rebound congestion.

138. D — First generation agents are avoided for their atropine-like thickening of mucus; second generation agents are preferred in chronic or allergic sinusitis, and antihistamines are contraindicated in acute bacterial sinusitis.

139. A — In adults with type I penicillin allergy the booklet gives doxycycline or quinolones such as levofloxacin and moxifloxacin.

140. B — Plain penicillin V does not cover the β -lactamase producing organisms and anaerobes involved in sinusitis; it is the pharyngitis first choice, not the sinusitis one.

141. C — The booklet states the causative organisms are as in otitis media plus anaerobes.

Lower Respiratory Tract Infection

142	143	144	145	146	147	148	149
C	D	A	B	C	B	D	A

142. C — Antibiotics are used only if fever or respiratory symptoms last more than 4–6 days, or in elderly or immunocompromised patients.

143. D — Acute bronchitis is usually viral; antibiotics are reserved for persistent symptoms. Corticosteroids are only for cough persisting beyond 14 days, and ribavirin aerosol is approved only for RSV.

144. A — Ribavirin aerosol is approved for RSV infection and reserved for severely ill infants and those with chronic lung disease, congenital heart disease, prematurity or immunodeficiency. Corticosteroids have no proven effect in bronchiolitis.

145. B — Nebulised epinephrine is described as more effective than albuterol in hospitalised patients.

146. C — The definition excludes underlying bronchiectasis or tuberculosis.

147. B — The common pathogens listed are H. influenzae, M. catarrhalis and S. pneumoniae.

148. D — 5–7 days, with fluoroquinolone therapy as a short course of 5 days once daily.

149. A — Antibiotics are indicated for moderate to severe symptoms or risk factors: old age, cardiac disease, repeated antibiotic therapy and home oxygen use.

Pneumonia									
150	151	152	153	154	155	156	157	158	159
D	B	D	D	A	B	A	A	A	D
160	161	162	163	164	165	166	167	168	169
B	C	D	B	C	A	B	B	C	C
170	171	172	173	174	175	176	177		
B	C	A	A	C	C	B	D		

150. D — When *Pseudomonas* is suspected, two antipseudomonal drugs are combined: an IV β -lactam (ceftazidime, piperacillin-tazobactam or meropenem) plus a fluoroquinolone.

151. B — The second antipseudomonal option is an aminoglycoside plus azithromycin or an IV fluoroquinolone.

152. D — Meropenem is one of the IV β -lactams combined with a fluoroquinolone when *Pseudomonas* is suspected — a hospital, not an outpatient, regimen.

153. D — A β -lactam plus azithromycin covers typical and atypical organisms in the inpatient, non-ICU setting.

154. A — For a patient with comorbidities the booklet allows combination therapy with an oral β -lactam plus azithromycin, covering typical and atypical organisms.

155. B — Daptomycin is NOT used, because it is inactivated by pulmonary surfactant. Vancomycin or linezolid is added to any regimen.

156. A — The booklet is explicit: add vancomycin or linezolid to any regimen, and daptomycin is not used.

157. A — Patients are discharged from hospital within 5 days if there is no complication.

158. A — For a hospitalised patient with negative blood culture the duration is 7–14 days.

159. D — The booklet counts 14 days from the day the blood culture becomes negative.

160. B — Daptomycin is inactivated by pulmonary surfactant and is never used for pneumonia.

161. C — With no comorbidity and no recent antibiotics there is no resistance risk, so monotherapy is started: azithromycin, doxycycline or a respiratory fluoroquinolone.

162. D — Previous exposure means the antibiotic must come from a different class, so the macrolide is avoided.

163. B — He has a comorbidity and recent macrolide exposure, so a more potent drug from a different class is used: a respiratory fluoroquinolone, and levofloxacin's course is 5 days.

164. C — Cancer is a comorbidity and the macrolide was given within 3 months, so a fluoroquinolone from a different class is chosen; levofloxacin's duration is 5 days.

165. A — *Pseudomonas* needs two antipseudomonal drugs — an IV β -lactam plus a fluoroquinolone — and ORSA needs vancomycin or linezolid added to the regimen.

166. B — Two antipseudomonal drugs must be combined; a single agent is not adequate.

167. B — The three criteria are stable vital signs for 24 hours, improved and stable oxygenation, and tolerance of oral therapy with a normal GIT.

168. C — *S. pneumoniae* is first and *M. pneumoniae* second; *Moraxella* is noted especially at the extremes of age.

169. C — CURB-65 scores one point each for new confusion, urea above 7 mmol/l, respiratory rate 30 or more, systolic BP under 90 or diastolic 60 or less, and age 65 or over.

170. B — 0–1 is outpatient, 2 is a short stay or close watching, and 3–5 requires hospitalisation with consideration of ICU.

171. C — HAP occurs more than 48 hours after admission; ventilator associated pneumonia occurs 48–72 hours after endotracheal intubation.

172. A — Aspiration of oropharyngeal contents gives anaerobes and *S. viridans*; aspiration of GIT contents gives enteric Gram-negative bacilli. Risk factors are GERD and acid suppressants.

173. A — The booklet lists staphylococci, *Pseudomonas* and fungal infection in the neutropenic patient.

174. C — The booklet is explicit: respiratory function first, antimicrobial selection second.

175. C — Category I — no risk of drug resistance — begins with monotherapy.

176. B — Category III follows category II but selects an antibiotic from a class different from the one recently used.

177. D — Adult outpatient treatment is 7–10 days, except azithromycin and levofloxacin, which run 5 days.

Diphtheria

178	179	180	181	182
B	D	C	A	A

178. B — The antitoxin neutralises the toxin before irreversible binding and damage; penicillin or erythromycin is what reduces the bacilli in the throat.

179. D — A sensitivity test to horse serum must be done; in allergic patients hyposensitisation is carried out with slowly increasing doses.

180. C — Antibiotics reduce the bacillary load and hence toxin production; the antitoxin deals with toxin already released.

181. A — Contacts receive single-dose IM penicillin and the toxoid vaccine if unvaccinated or incompletely vaccinated.

182. A — The booklet gives suffocation as the indication.



Pharmacology made clear.



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