

Contents

	Competency Number (NMC Curriculum)	Pages
PART I: General Microbiology, Immunology and Hospital Infection Control		
Section 1: General Microbiology		
1. Introduction and History	MI 1.1	3
2. Microscopy	MI 1.1	6
3. General Bacteriology		
3.1. Bacterial Taxonomy	MI 1.1	11
3.2. Morphology and Physiology of Bacteria	MI 1.1	14
3.3. Laboratory Diagnosis of Bacterial Infections	MI 1.1, 1.2, 1.6, 8.9, 8.10	22
• Specimen Collection		
• Direct Detection (Staining Methods and Others)		
• Culture, Identification and Antimicrobial Susceptibility Test		
• Molecular Diagnosis and Typing Methods		
3.4. Bacterial Genetics	MI 1.1	43
3.5. Antimicrobial Agents and Antimicrobial Resistance	MI 1.6	51
3.6. Pathogenesis of Bacterial Infections	MI 1.1	58
3.7. Overview of Bacterial Infections	MI 1.1	62
4. General Virology and Overview of Viral Infections	MI 1.1, 8.9, 8.10	70
5. General Parasitology and Overview of Parasitic Infections	MI 1.1, 1.2, 8.9, 8.10	89
6. General Mycology and Overview of Fungal Infections	MI 1.1, 1.2, 8.9, 8.10	101
7. Normal Human Microbiota	MI 1.1	107
8. Epidemiology of Infectious Diseases	MI 1.3	111
Section 2: Immunology		
9. Immunity (Innate and Acquired)	MI 1.7	119
10. Antigen	MI 1.8	125
11. Antibody	MI 1.8	129
12. Antigen-antibody Reaction	MI 1.8, 8.13, 8.15	136
13. Complement	MI 1.8	146
14. Components of Immune System: Organs, Cells and Products	MI 1.8	152
15. Immune Responses: Cell-mediated and Antibody-mediated	MI 1.8	166
16. Hypersensitivity	MI 1.10	174
17. Autoimmunity	MI 1.10	182
18. Immunodeficiency Disorders	MI 1.10	185
19. Transplant and Cancer Immunology	MI 1.11	189
20. Immunoprophylaxis	MI 1.9	195

Section 3: Hospital Infection Control

21. Healthcare-associated Infections	MI 8.5, 8.6, 8.7	203
22. Major Healthcare-associated Infection Types	MI 8.5, 8.6	213
23. Sterilization and Disinfection	MI 1.4, 1.5	220
24. Biomedical Waste Management	MI 8.5, 8.6	232
25. Needle Stick Injury	MI 8.5, 8.6	237
26. Antimicrobial Stewardship	MI 1.6	241
27. Environmental Surveillance (Bacteriology of Water, Air and Surface)	MI 8.8	245

PART II: SYSTEMIC MICROBIOLOGY (INFECTIOUS DISEASES)

Section 4: Bloodstream and Cardiovascular System Infections

28. Cardiovascular System Infections: Infective Endocarditis and Acute Rheumatic Fever	MI 2.1, 2.2, 2.3, 8.13, 8.15	251
29. Bloodstream Infections (Including Infections Causing Anemia)	MI 1.1, 2.4, 8.15	257

Bacterial Infections

30. Enteric Fever (<i>Salmonella</i> Typhi and <i>Salmonella</i> Paratyphi)	MI 3.3, 3.4, 8.15	262
31. Rickettsial Infections	MI 1.1, 8.15	269
32. Miscellaneous Bacterial Bloodstream Infections: Brucellosis, Leptospirosis and Borreliosis	MI 1.1, 8.1, 8.15	275

Viral Infections

33. HIV/AIDS	MI 2.7, 8.15, 8.16	283
34. Viral Hemorrhagic Fever (VHF) Arboviral VHF (Dengue, Chikungunya and Others), Filoviral VHF (Ebola and Marburg Virus), Hantaviral and Other Agents of VHF	MI 1.1, 8.15	293

Parasitic Infections

35. Malaria and Babesiosis	MI 2.5, 2.6, 8.16	303
36. Visceral Leishmaniasis and Trypanosomiasis	MI 2.5, 1.1, 8.16	311
37. Lymphatic Filariasis	MI 2.5, 2.6, 8.16	316

Fungal Infections

38. Systemic Candidiasis and Systemic Mycoses	MI 1.1, 8.15	321
---	--------------	------------

Section 5: Gastrointestinal (GI) Infections

39. Gastrointestinal Infective Syndromes	MI 3.1	327
--	--------	------------

Bacterial Infections

40. Food Poisoning: <i>S. aureus</i> , <i>Bacillus cereus</i> , <i>Clostridium botulinum</i> and Others	MI 3.5	332
41. Gastrointestinal Infections due to Enterobacteriaceae : Diarrheagenic <i>Escherichia coli</i> , Shigellosis, Nontyphoidal Salmonellosis and Yersiniosis	MI 3.1, 3.2	337
42. Cholera, Halophilic <i>Vibrio</i> and <i>Aeromonas</i> Infections	MI 3.1, 3.2	346
43. Miscellaneous Bacterial Infections of Gastrointestinal System: <i>Helicobacter</i> , <i>Campylobacter</i> and <i>Clostridioides difficile</i> Infections	MI 3.1, 3.2, 3.6	354

Viral Infections

44. Viral Gastroenteritis: Rotaviruses and Others	MI 3.1, 3.2	359
---	-------------	------------

Parasitic Infections

45. Intestinal Protozoan Infections: Intestinal Amoebiasis, Giardiasis, Coccidian Parasitic Infections, Balantidiasis, Blastocystosis, and Others	MI 3.1, 3.2, 1.2, 8.15	362
46. Intestinal Helminthic Infections	MI 3.1, 3.2, 1.2, 8.15	374
• Intestinal Cestode Infections: <i>Diphyllobothrium</i> , <i>Taenia</i> , <i>Hymenolepis</i> and Others		
• Intestinal Trematode Infections: <i>Fasciolopsis buski</i> , <i>Schistosoma mansoni</i> , <i>S. japonicum</i> and Others		
• Intestinal Nematode Infections: <i>Trichuris</i> , <i>Enterobius</i> , hookworm, <i>Strongyloides</i> , <i>Ascaris</i> and Others		

Section 6: Hepatobiliary System Infections

47. Infective Syndromes of Hepatobiliary System and Abdomen	MI 3.1	393
Viral Infections		
48. Viruses Causing Hepatitis Hepatitis Viruses, Yellow Fever and Others	MI 3.7, 3.8, 8.13, 8.15	395
Parasitic Infections		
49. Parasitic Infections of Hepatobiliary System Amoebic Liver Abscess, Hydatid Disease (<i>Echinococcosis</i>), Trematode Infections (<i>Fasciola hepatica</i> , <i>Clonorchis</i> and <i>Opisthorchis</i>) and Others	MI 3.1, 3.2	409

Section 7: Skin, Soft Tissue and Musculoskeletal System Infections

50. Infective Syndromes of Skin, Soft Tissue and Musculoskeletal Systems	MI 4.1, 4.2, 4.3, 1.2	417
Bacterial Infections		
51. Staphylococcal Infections	MI 4.2, 4.3, 1.2	422
52. Beta-hemolytic Streptococcal Infections	MI 4.3, 1.2	430
53. Gas Gangrene (<i>Clostridium perfringens</i>) and Infections due to Non-sporing Anaerobes	MI 4.1, 1.2	437
54. Leprosy (<i>Mycobacterium leprae</i>)	MI 4.3, 8.15, 8.16	444
55. Miscellaneous Bacterial Infections of Skin and Soft Tissues: Anthrax (<i>Bacillus anthracis</i>), Actinomycosis, Nocardiosis, Nonvenereal Treponematoses and Others	MI 4.3, 1.2, 8.13, 8.15	449
Viral Infections		
56. Viral Exanthems and Other Cutaneous Viral Infections Herpesviruses (Herpes Simplex, Varicella-zoster and HHV-6 and 7 Infection), Poxviruses (Smallpox, Molluscum contagiosum), Parvovirus, Measles, Rubella, Coxsackieviruses and Others	MI 4.3, 8.15	459
Parasitic Infections		
57. Parasitic Infections of Skin, Soft Tissue and Musculoskeletal System Cutaneous Leishmaniasis, Cysticercosis, Tissue Nematodes (Filarial Tissue Nematodes, <i>Dracunculus medinensis</i> , <i>Trichinella spiralis</i>) and Larva Migrans	MI 4.2, 4.3, 8.13, 8.15	474
Fungal Infections		
58. Fungal Infections of Skin, Soft Tissue and Musculoskeletal System Superficial Fungal Infections, Subcutaneous Fungal Infections, Candidiasis (cutaneous and mucosal) and <i>Penicillium marneffei</i> Infection	MI 4.2, 4.3, 8.13, 8.15	478

Section 8: Respiratory Tract Infections

59. Infective Syndromes of Respiratory Tract	MI 6.1, 6.2, 6.3	487
Bacterial Infections		
60. Bacterial Pharyngitis: <i>Streptococcus pyogenes</i> Pharyngitis, Diphtheria and Others	MI 6.1, 6.2, 8.15	491
61. Bacterial Lobar Pneumonia: Pneumococcal Pneumonia, <i>Haemophilus influenzae</i> Pneumonia and Others	MI 6.1, 6.3, 1.2, 8.15	499
62. Bacterial Atypical (Interstitial) Pneumonia: <i>Mycoplasma</i> , <i>Chlamydia</i> , <i>Legionella</i> and Others	MI 6.1, 6.3	510
63. Tuberculosis and Nontuberculous Mycobacteria Infections	MI 6.1, 6.3, 1.2, 8.16	515
64. Pertussis (<i>Bordetella pertussis</i>)	MI 6.1	530
65. Infections due to Non-fermenting Gram-negative Bacilli: <i>Pseudomonas</i> , <i>Acinetobacter</i> , <i>Burkholderia</i> and Others	MI 6.1, 6.3, 4.3	534
Viral Infections		
66. Myxovirus Infections of Respiratory Tract: Influenza, Parainfluenza, Mumps, Respiratory Syncytial Virus and Others	MI 6.1, 6.2, 6.3	540
67. Coronavirus Infections Including COVID-19	MI 6.1, 6.2, 6.3	551

68. Miscellaneous Viral Infections of Respiratory Tract: Rhinovirus, Adenovirus and Infectious Mononucleosis (Epstein-Barr Virus)	MI 6.1, 6.2	557
---	-------------	------------

Parasitic and Fungal Agents

69. Parasitic and Fungal Infections of Respiratory Tract	MI 6.1, 6.2, 6.3	561
• Parasitic Infections: Paragonimiasis and Others		
• Fungal Infections: Zygomycosis, Aspergillosis, Pneumocystosis and Others		

Section 9: Central Nervous System Infections

70. Infective Syndromes of Central Nervous System	MI 5.1, 5.2, 5.3	571
---	------------------	------------

Bacterial Infections

71. Bacterial Meningitis	MI 5.1, 5.3, 1.2, 8.15	574
• Acute Bacterial (Pyogenic) Meningitis: <i>Neisseria meningitidis</i> , <i>Streptococcus pneumoniae</i> , <i>Streptococcus agalactiae</i> , <i>Haemophilus influenzae</i> and <i>Listeria</i>		
• Chronic Bacterial Meningitis: Tubercular Meningitis, Spirochetal Meningitis, Lyme Disease and Others		

72. Tetanus	MI 4.1	584
-------------	--------	------------

Viral Infections

73. Viral Meningitis and Myelitis: Poliomyelitis, Coxsackievirus Infections, and Others	MI 5.1, 5.3, 8.16	588
74. Viral Encephalitis and Encephalopathy	MI 5.2, 8.15	597
Rabies, HSV Encephalitis, Arboviral Encephalitis (Japanese Encephalitis and West Nile), Nipah and Hendra, Slow Virus and Prion Disease, and Others		

Parasitic and Fungal Infections

75. Parasitic and Fungal Infections of Central Nervous System	MI 5.1, 5.2, 5.3, 8.15	609
• Parasitic Infections: Neurocysticercosis, Free-living Amoeba Infections, Toxoplasmosis and Others		
• Fungal Infections: Cryptococcal Meningitis and Others		

Section 10: Urogenital Tract Infections

76. Infective Syndromes of Urinary Tract	MI 7.1, 7.3	621
• Bacterial Infections: Enterobacteriaceae, <i>Enterococcus</i> and Others		
• Viral (BK Virus), Parasitic (<i>Schistosoma haematobium</i>) and Fungal Infections		

77. Infective Syndromes of Genital Tract and Sexually-transmitted Infections	MI 7.1, 7.2, 8.15	631
• Ulcerative Genital Disease: Syphilis, Lymphogranuloma Venerum, Granuloma Inguinale, Soft Chancre and Genital Herpes		
• Gonorrhea and Non-gonococcal Urethritis (<i>Chlamydia trachomatis</i> and Others)		
• Vulvovaginitis (Trichomoniasis, Bacterial Vaginosis, Vaginal Candidiasis)		
• Other Genital Tract Infections of Females and Males		

Section 11: Miscellaneous Infective Syndromes

78. Ocular and Ear Infections	MI 1.1, 8.15	653
79. Congenital Infections	MI 1.1, 8.15	659
Cytomegalovirus Infections, Congenital Varicella, Neonatal Herpes, Congenital Rubella, Congenital Toxoplasmosis, Congenital Syphilis, Zika Virus Infections and Others		
80. Organisms with Oncogenic Potential	MI 8.3	665
Human Papilloma Virus, Kaposi Sarcoma, HTLV and HIV, Epstein-Barr Virus, Hepatitis B and C, and Others		
81. Zoonotic Infections: Plague, Tularaemia and Bite Wound Infections	MI 8.1	671

Annexures

1. Opportunistic Infections	MI 8.2	681
2. Post-transplantation Infections	MI 1.1, 8.2	682
3. Emerging and Re-emerging Infections	MI 8.4	683

4. Bioterrorism—Biological Warfare	MI 1.1	684
5. Laboratory-acquired Infections	MI 1.1	686
6. National Health Programmes for Communicable Diseases	MI 8.16	687
7. Vector-borne Infections and Ectoparasite Infestations	MI 8.1	688
8. Transfusion-transmitted Infections	MI 1.1	691
9. AETCOM in Microbiology	MI 8.11, 8.12, 8.14	692
10. Pandemic Management	NMC's Pandemic Management Module	701
<i>Index</i>		703