



8

Infectious Diseases

Alexander J. McAdam • Danny A. Milner • Arlene H. Sharpe

CHAPTER CONTENTS

General Principles of Microbial Pathogenesis 341

How Microorganisms Cause Disease 342

- Routes of Entry of Microbes* 342
- Spread and Dissemination of Microbes Within the Body* 344
- Release from the Body and Transmission of Microbes* 345

Host-Pathogen Interactions 345

- Host Defenses Against Infection* 345
- Immune Evasion by Microbes* 345
- Injurious Effects of Host Immunity* 347
- Infections in People with Immunodeficiencies* 347

Host Damage 348

- Mechanisms of Viral Injury* 348
- Mechanisms of Bacterial Injury* 349

Sexually Transmitted Infections 351

Spectrum of Inflammatory Responses to Infection 351

- Suppurative (Purulent) Inflammation* 352
- Mononuclear and Granulomatous Inflammation* 352
- Cytopathic-Cytoproliferative Reaction* 353
- Tissue Necrosis* 353
- Chronic Inflammation and Scarring* 353

Special Techniques for Diagnosing Infectious Agents 353

Viral Infections 354

Acute (Transient) Infections 354

- Measles* 355
- Mumps* 355
- Poliovirus Infection* 356

West Nile Virus 356

Viral Hemorrhagic Fever 357

Latent Infections (Herpesvirus Infections) 357

- Herpes Simplex Viruses* 357
- Varicella-Zoster Virus (VZV)* 358
- Cytomegalovirus* 359

Chronic Productive Infections 360

Transforming Viral Infections 360

- Epstein-Barr Virus (EBV)* 360

Bacterial Infections 362

Gram-Positive Bacterial Infections 362

- Staphylococcal Infections* 362
- Streptococcal and Enterococcal Infections* 364
- Diphtheria* 365
- Listeriosis* 366
- Anthrax* 366
- Nocardia* 367

Gram-Negative Bacterial Infections 367

- Neisserial Infections* 368
- Pertussis* 368
- Pseudomonas Infection* 369
- Plague* 370
- Chancroid (Soft Chancre)* 370
- Granuloma Inguinale* 370

Mycobacteria 371

- Tuberculosis* 371
- Mycobacterium avium Complex* 376
- Leprosy* 377

Spirochetes 378

- Syphilis* 378
- Lyme Disease* 381

Anaerobic Bacteria 382

- Abscesses Caused by Anaerobes* 382
 - Clostridial Infections* 382
- #### Obligate Intracellular Bacteria 383
- Chlamydial Infections* 383
 - Rickettsial Infections* 384

Fungal Infections 385

Yeast 386

- Candidiasis* 386
- Cryptococcosis* 387

Molds 388

- Aspergillosis* 388
- Zygomycosis (Mucormycosis)* 389

Dimorphic Fungi 390

Parasitic Infections 390

Protozoa 390

- Malaria* 390
- Babesiosis* 392
- Leishmaniasis* 392
- African Trypanosomiasis* 394
- Chagas Disease* 394

Metazoa 395

- Strongyloidiasis* 395
- Tapeworms (Cestodes): Cysticercosis and Hydatid Disease* 395
- Trichinosis* 396
- Schistosomiasis* 397
- Lymphatic Filariasis* 398
- Onchocerciasis* 399

Emerging Infectious Diseases 400

General Principles of Microbial Pathogenesis

Despite the availability of effective vaccines and antibiotics, infectious diseases remain an important health problem throughout the world. In the United States and other high-income countries, infectious diseases are particularly

important causes of death among older adults and in people who are immunosuppressed or who suffer from debilitating chronic diseases. In the developing world, inadequate access to medical care and malnutrition contribute to a heavy burden of infectious diseases. In these areas, six of the ten leading causes of death are infectious diseases. Tragically, most of these deaths occur in children, with respiratory and diarrheal infections taking the greatest toll.