Section 21.1: Understanding Infectious Diseases

I. Causes of Infectious Diseases

A. Infectious Diseases are also known as communicable diseases and are caused by organisms or viruses that enter and multiply within the human body. Most are too small to be seen without a microscope, so they are referred to as microorganisms.

B. Microorganisms and viruses that cause disease by entering and multiplying in your body are called pathogens.
   - Bacteria
     o simple, single-celled microorganisms that can live in air, soil, food, and in and on the bodies of plants and animals.
   - Viruses
     o smallest pathogens that can only multiply by entering a living cell
   - Fungi
     o yeasts, molds, and mushrooms that grow best in warm, dark, moist areas.
   - Protozoans
     o single-celled organisms that are much larger and more complex than bacteria and have the ability to move through fluids in search of food.

II. How Pathogens Are Spread

A. Infected People
   - Directly such as shaking hands, kissing, or sexual contact
   - Indirectly when a person coughs or sneezes and you inhale the droplets

B. Infected Animals
   - mammals and insects

C. Contaminated Objects
   - Doorknobs, eating utensils, towels

D. Contaminated Food, Soil, or Water

Section 21.2: Defenses Against Disease

I. 1st Line of Defense → Physical and Chemical Defenses: prevent pathogens from entering your body

A. Skin
   - Serves as both a physical and chemical barrier along with sweat

B. Mucous Membranes
   - Mucus covering that lines the openings into your body, such as your mouth, eyes, and nose

C. Cilia
   - Tiny hair-like structures that line the mucous membranes that help trap dust and pathogens in the air

D. Saliva and Tears
   - Trap pathogens and wash them away

E. Digestive System
   - Acid, the movement of food out of the body, and normal good bacteria that harm of kill invading bacterial

II. 2nd Line of Defense → Inflammation: your body’s general response to all kinds of injury, from cuts and scrapes to internal damage.
   - Phagocytes=white blood cells that engulf and destroy pathogens
B. Healing due to accumulation of fluids, phagocytes, and destroyed pathogens at the injury site

III. 3rd Line of Defense → The Immune System (the most sophisticated) fights disease by producing a separate set of weapons for each kind of pathogen it encounters

A. The Immune Response is carried out by white blood cells called lymphocytes. Together these cells build up an arsenal against invading pathogens. Disease typically results when a pathogen first enters your body, but immunity occurs as a result and protects the person in the future.

- T Cells (Killer T, Helper T, Suppressor T)
- B Cells produce specific antibodies that attach to the surface of pathogens or to the toxins produced by pathogens.

B. Lymphatic System is the site where much of your immune system in contained.

IV. Passive and Active Immunity

A. Passive Immunity – this is the immunity acquired by receiving antibodies from sources other than one’s own immune system.

B. Active Immunity – this results from either having had the disease or from receiving a vaccine.

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**Section 21.3: Common Infectious Diseases**

I. Bacterial Diseases

A. Strep Throat
B. Lyme Disease
C. Bacterial Meningitis
D. Tuberculosis

II. Treating Bacterial Diseases

- Antibiotics inhibit or kill bacteria
- Finish entire prescriptions otherwise resistant strains of the bacteria may survive and make them difficult to treat

III. Viral Diseases

A. The Common Cold
B. Influenza
C. Pneumonia
D. Hepatitis (A, B, and C)
IV. Treating Viral Diseases
   - In most cases there is no particular medicine that can cure a viral infection.
   - Antiviral medicines may shorten the length of infection and rest, a good diet, and plenty of fluids are the best treatments.
   - Over-the-counter medicine may treat the symptoms, making your feel better, but they do not cure the infection.

V. Getting Healthy, Staying Healthy
   A. When to Seek Medical Care
      - Extremely sore throat, earache, vomiting, diarrhea, 101°F temperature lasting more than 2 days; thick or yellowish green nose or throat mucous; difficulty breathing or severe pain; wounds that do not heal
   B. Preventing Infectious Diseases
      - Avoid contact with pathogens, update your immunizations, choose healthful behaviors

Section 21.4: Emerging Infectious Diseases
I. What is an Emerging Disease?
   - An infectious disease that has become increasingly common in humans within the last 20 years or threaten to become more common in the future
   - Epidemic: an unusually high occurrence of a disease in a certain place during a certain time period

II. Why Do Diseases Emerge?
   A. Contact with Infected Animals
   B. Drug Resistance
   C. Lack of Immunization
   D. International Travel
   E. Global Food Supply