Types of Diseases

MS8.3c I can describe how bacteria, viruses, fungi, and parasites may infect the human body and interfere with normal body functions. (DOK 1)
Organisms that cause disease are called pathogens.

Diseases that are caused by pathogens are called infectious diseases. An infectious disease is a disease that is caused by the presence of a living thing within the body. When you have an infectious disease, pathogens have gotten inside your body.
Kinds of Pathogens:

1. **Bacteria**: One-celled microorganisms that cause a wide variety of diseases, including ear infections, food poisoning, and strep throat.
   1. Can damage the cell **directly**.
   2. Can damage the cell indirectly using **toxins**, or poison.

*Example*: **Strep throat, tuberculosis**

*pink eye*
Close-up of the red and inflamed throat of a 37 year old female patient with a streptococcal group B bacterial infection.

MRSA resistant Staphylococcus bacteria

Symptoms: sore throat, sudden fever, headache, chills, loss of appetite, swollen lymph nodes in neck.

BACTERIAL STREP THROAT
2. **Viruses**: Tiny particles that cannot reproduce unless inside living cells. Cells are damaged or destroyed in the process, releasing new viruses to infect other cells.

*Example: chicken pox*
Varicella Zoster Virus

Chicken pox blisters on a little girl

Symptoms: fever, loss of appetite, headache, tiredness, and eventually a rash appears

CHICKEN POX
3. **Fungi**: Includes molds and yeast. They grow best in warm, dark, and moist areas.

   *Example: Athlete’s foot, ringworm*
Symptoms: itching, stinging, and burning between the toes; blisters that itch
4. **Parasites**: Small, often microscopic organisms that also can cause disease.

*Example: Malaria, Hiker’s disease*
Malaria mosquito feeding

Symptoms: fever, chills, sweats, headaches, nausea, vomiting, body aches

Colored freeze-fractured transmission electron micrograph (TEM) of a section through a red blood cell infected with a malaria parasite (Plasmodium sp.)
How Pathogens are Spread:

1. **Person-to-Person Transfer**
   a. Directly through **physical contact** (ex: kissing, shaking hands)
   b. **Indirect contact** (ex: airborne diseases)

2. **Pathogens from the environment** (ex: botulism)
3. **Contaminated objects** (ex: tetanus)

4. **Animal bites** (ex: rabies, Lyme disease, Rocky Mountain spotted fever)
Noninfectious diseases are diseases that are not caused by pathogens in the body. Unlike infectious diseases, noninfectious diseases cannot be transmitted from person to person.
Examples of Noninfectious Diseases:

1. **Allergy** - a disorder in which the immune system is overly sensitive to a foreign substance.
   - **Allergen** - any substance that causes an allergy (Ex: *dust, molds, some foods, and some medicines*)
   - **Histamine** is a chemical that is responsible for the symptoms of an allergy (ex: sneezing, watering eyes)
Examples of Noninfectious Diseases:

2. **Diabetes** - a condition that involves the **pancreas** failing to produce enough **insulin** (a chemical that enables body cells to take in glucose from the blood and use it for **energy**) or the body’s cells not using the insulin properly
Examples of Noninfectious Diseases:

3. **Cancer** - a disease in which cells multiply uncontrollably, over and over, destroying healthy tissue in the process

- A **tumor** is an abnormal tissue mass.
- **Carcinogens** - substances or factors in the environment that can cause cancer (ex: cigarette smoke, ultraviolet light)
Examples of Noninfectious Diseases:

- **Asthma** - a disorder in which the respiratory passages narrow significantly.