

Third Lecture

Epidemiology of Diseases **Communicable Diseases and Non-** **communicable Diseases**

Learning Objectives for the Lecture:

At the end of the lecture the student is going to be able to:

1. Define communicable and non-communicable diseases.
2. Describe the chain of infection.
3. Describe the links in the chain of infection.

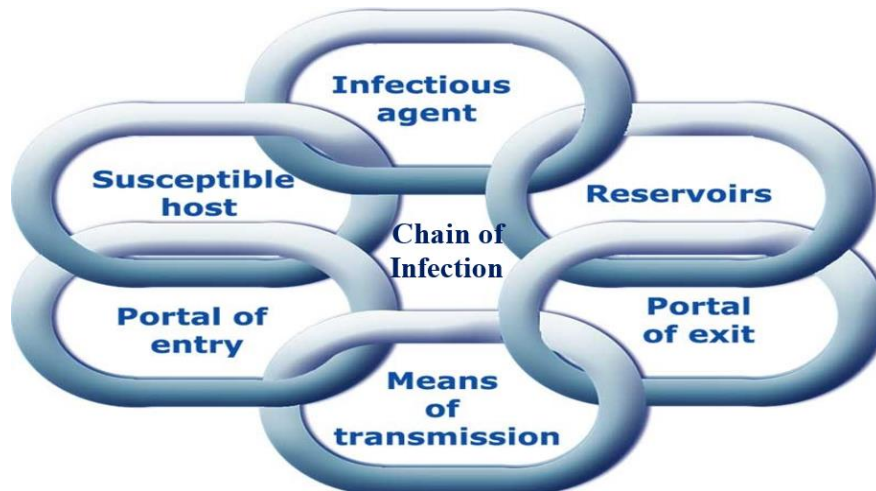
Communicable Diseases

Communicable diseases, also known as infectious diseases or transmissible diseases, are illnesses that result from the infection, presence and growth of biologic agents in an individual human or other animal host.

Communicable Diseases: They are diseases that spread by direct contact from infected person to a susceptible host.

Causes

1. direct contact with a person carrying the pathogen •
2. Contact with bodily fluids containing pathogens •
3. inhaling pathogen-containing droplets from another person's cough or sneeze •
4. receiving a bite from an animal or insect carrying the pathogen •
5. consuming contaminated water or foods.



Types of Pathogens

Four main types of pathogens cause infection: Viruses, bacteria, fungi, and protozoa.

Viruses

Viruses: are tiny pathogens that contain genetic material

Bacteria

Bacteria: are microscopic, single-celled organisms.

Fungi

Fungi: are a type of organism that includes yeasts, molds, and mushrooms. they commonly affect the skin and mucus membranes.

Protozoa

Protozoa are microscopic organisms that typically consist of a single cell.

Some protozoa are parasitic, meaning they live on or inside another organism and use the organism's nutrients for their own survival. Parasitic protozoa can cause various diseases.

Reservoir: The natural habitat, in which an agent lives, grows and multiplies.

Types of Reservoirs:

1. Human: persons with symptomatic illness.
2. Animals - cows, pigs, sheep, dogs, cats, birds etc.
3. Environmental - plants, water, food and soil.

Modes of Transmission:

It is the means by which the infectious agent which cause the disease transferred to a susceptible host.

Types for Modes of Transmission:

1. Air-borne transmission: The infectious agent is present in the air and inhaled (inspired) by susceptible host during respiration. Ex. Measles.
2. Feco-oral transmission. Ex. Hepatitis A, Salmonella.
3. Skin to skin contact. Ex. Dermatological diseases and STDs.
4. Transmission by direct inoculation, transmission through blood. Ex. AIDS, Hepatitis B, C and D.
5. Transmission by vectors. ex. Scabies, Malaria.

Portal of Entry: The means by which an infectious agent invades the host. This may include the respiratory tract, ingestion, dermal, blood borne, mucous membranes, etc.

The Susceptible Host: This describes the person who is vulnerable to infection. Infection can be prevented by breaking the Chain of Infection.

Incubation Period: It is the time between the entry of the infectious agents and the occurrence of clinical features.

Table 1. Incubation Periods of Selected Exposures and Diseases

Exposure	Clinical Effect	Incubation/Latency Period
associated corona virus	Severe Acute Respiratory Syndrome (SARS)	3–10 days, usually 4–6 days
Herpes zoster virus	Chickenpox	10–21 days, usually 14–16 days

there are a few terms used to depict the frequency or spread of diseases.

Endemic - The usual or constant presence of an infectious agent or disease in a specific geographical area.

Epidemic - A sudden increase in the number of cases of a disease that is above what is expected normally in a given area.

Pandemic - This is an epidemic that spreads over many different countries or continents, and affects a very large population.

Non-communicable Diseases

Non-communicable (Infectious) Diseases: are those diseases that are not caused by a pathogen and cannot be shared or transferred from one person to another.

Non-communicable diseases (NCDs), such as heart disease, cancer, chronic respiratory disease, and diabetes, are the leading cause of death worldwide and represent an emerging global health threat. Deaths from NCDs now exceed all communicable disease deaths combined. NCDs kill 41 million people each year, equivalent to over 7 out of 10 deaths worldwide. Changing social, economic, and structural factors such as more people moving to cities and the spread of unhealthy lifestyles have fueled the NCD crisis that kills 15 million people prematurely—before the age of 70—each year.

Causes of Non-communicable Diseases:

1. The environment.
2. Nutritional deficiencies.
3. Lifestyle choices.
4. Genetic inheritances.

Environmental diseases:

Unlike communicable diseases, non-communicable diseases are not communicable or contagious, although some kinds can be passed down genetically to the children of a carrier.

NCDs include many environmental diseases covering a broad category of avoidable and unavoidable human health conditions caused by external factors, such as sunlight, nutrition, pollution, and lifestyle choices.

❖ **Examples of non-communicable include:**

- ❖ Many types of cardiovascular disease (CVD)
- ❖ Chronic obstructive pulmonary disease (COPD) caused by smoking tobacco
- ❖ Diabetes mellitus type 2
- ❖ Lower back pain caused by too little exercise
- ❖ Malnutrition caused by too little food, or eating the wrong kinds of food (e.g. lack of Vitamin C)
- ❖ Skin cancer caused by radiation from the sun
- ❖ Obesity

Inherited diseases

Genetic disorders are caused by errors in genetic information that produce diseases in the affected people.

*A change in chromosome numbers, such as Down syndrome.

the sweat glands. The mucus secreted is very thick and blocks passageways in the lungs and digestive tracts. This mucus causes problems with breathing and with the digestion and absorption of nutrients.