

Epidemiology of communicable diseases

Definition of basic terms:

Infection: is the entry and development or multiplication of an infectious agent in the body.

Infectious disease: A disease of man or animal resulting from an infection.

Communicable disease: An illness due to specific infectious agent or its toxic products which develops through transmission of that agent or its toxic products from a reservoir to a susceptible host either directly or indirectly.

Reservoir: Any human beings, animals, plants, arthropods, soil or inanimate matter in which an infectious agent normally lives and multiplies and from which it passes to a new host.

Susceptible: A person or animal having no resistance against pathogenic agents to prevent disease.

Carrier: An infected person who harbors a specific infectious agent in the absence of clinical features. It acts as a source of infection to others. Carriers may be incubatory, convalescent or chronic.

Incubation period: The time interval from infection (exposure) till the appearance of clinical features of the infectious disease

Mode of transmission: The way disease agents are transmitted from the source of infection to new hosts .

The common modes of transmission are:

- 1-Direct transmission: Direct contact, droplet infection, from contaminated soil or water and bites of animals.
- 2-Indirect transmission: Vehicle borne, vector borne, air borne.
- 3-Other routes: Injection, transplacental, laboratory infection.

Chemoprophylaxis: The administration of a chemical including antibiotics to prevent the development of an infection or the progression of infection to active infectious disease. Examples are chloroquine against malaria, INH against tuberculosis.

Chemotherapy: The use of a chemical to cure clinically recognizable disease or to limit its further progress.

Prevention: is to make the occurrence of something (disease, accident) impossible. Prevention can be practiced at three levels :

Primary prevention

Secondary prevention

Tertiary prevention

The general strategies to control communicable diseases

1. The elimination of source of infection by effective detection and treatment of cases and carriers or dealing with any other source.
2. Interruption of transmission pathways by, for example, the destruction of intermediate hosts, destruction of breeding sites and purification of water.
3. Improvement of host resistance or immunity • against infection as for example by immunization

Ecology of health

is the study of all factors in the environment • that affects the health of man. Any given state of health is a product of interaction (visible and invisible) of enormous number of factors.

Factors affecting health

- **Factors related to host** such as age, sex, occupation, education, genetics, habits and other personal characteristics. Smoking for example is an important contributor in the etiology of lung cancer and ischemic heart diseases. Many diseases are genetically determined such as sickle cell disease and Thalassemia.
- **Factors related to disease agent** like, type of agent (bacteria, viruses, parasites, fungi etc.) dose and duration of exposure, virulence and susceptibility to damaging effects of the environment such as heat and light.

Factors related to environment in its physical, chemical, biological and social dimensions.

Environment:

1. assists the ***survival*** of disease agent
2. facilitates the ***transmission*** of disease agent from the source to a new host
3. affects the ***immunity*** of the host.