



Principles Of Disease Transmission

Humans, lower animals, and plants can be successfully parasitized by a variety of microorganisms, worms, mites, and ticks. Essential to the survival of such disease agents as pathogens is their transmission from sources of infection to susceptible hosts .

Several terms are used to describe the prevalence of the diseases .

A- Epidemiology: is the study of the distribution and causes of disease, both infectious and non-infectious .

B- Endemic: which refers to a disease that is constantly present but that involves a relatively is small number of victims .

C- Epidemic: unusual occurrence of a disease involving large segments of the population for a limited time period .

D- Pandemic: a series of epidemics affecting several areas of the world .

E-Sporadic: which describes disease that appear at unusual or irregular periods .

F- Morbidity rate: is the number of individuals per 100,000 having a disease within a given time period .

G-Mortality rate refers to the number of deaths due to a particular disease per 1000 individuals within a given time period .

H-zoo noses: diseases that primarily affect lower animals but that can also be transmitted to human by natural means are called zoo noses .

Sources and Reservoirs of Infection :

- 1-Sources of infection agents are many and varied .
- 2-The most disabling and common human infections are caused by microbes capable of using human tissues for their own needs and thus making these tissues into sources of infectious material.
- 3-Individuals harboring disease agents without any ill effects are called healthy carriers.
- 4-Persons in an incubating state but still without symptoms are called incubatory carriers .
- 5-Individuals recovering from infection and secreting disease agents in body fluids are referred to as carriers convalescent .

Principal modes of transfer for Infectious - disease agent

- 1-Infectious- disease agent can be transmitted to susceptible individuals by :
 - a- Direct contact .
 - b- Indirect contact with contaminated food or inanimate objects or substances known as fomites .
 - c- Inhalation of airborne dust or other particles .
 - d- Inoculation .
 - e-Arthropods .
- 2-Arthropods, which include fleas, ticks, and mosquitoes, transmit disease agents either mechanically or biologically .
- 3-Mechanical transmission is the simple physical transporting of a pathogen from one location to the next .

In biological transmission, a portion of the pathogen's life cycle is carried out in the transporting body .

4-Disease agents can be mechanically transmitted by :

- a-Fingers
- b-Flies
- c-Contaminated food and water .
- d-Feces .
- e-Fomites .

Direct contact :

Individuals can acquire disease agents through direct contact with open sores and other lesions, through shaking .

Indirect contact :

Various microorganisms can be transferred by contaminated food water and fomites .

Air-and Dust borne Infection :

Individuals can release particle-bearing microorganisms into the environment by normal activities involving the respiration system such as talking, sneezing, and coughing .

Fomites :

Are inanimate objects or substances capable of absorbing and transferring pathogens.e.g. eating utensils, toys, instruments, and soiled bed clothes .

The Hospital Environment :

The hospital environment is a potential reservoir of infection Hospital Acquired, or Nosocomial Infections are the result of several factors including :

- 1-Patient overcrowding .
- 2-Staff shortages .
- 3-Indiscriminate and improper usage of antibiotics .
- 4-Longer and more complicated surgical procedures .
- 5-The use of such immunosuppressive agents such as anticancer drugs and irradiation .

The use of medical equipment's and devices either for diagnosis or treatment increases the risk of infection

Principles of Control :

Hospital-Acquired Infections can be controlled through :

- 1-**The use of techniques that reduce the direct or indirect transmission of pathogens (Medical asepsis) .
- 2-**Practices that make and keep objects and areas involved in surgical procedures sterile (Surgical asepsis).



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