Unit Five: INFECTIOUS DISEASES AND EMERGING AND RE-EMERGING DISEASES

Topic one: Infectious diseases

Infectious diseases may be

¨  Genetic

¨  Biological

¨  Physical

¨  Chemical

**Infectious Disease Agents**

Most infectious agents that cause disease are microscopic in size and thus, are called microbes or microorganisms.

Different groups of agents that cause disease are:

¤  Bacteria

¤  Viruses

¤  Protozoa (Protists)

¤  Fungi

¤  Helminths (Animals)

**How Infectious Agents Cause Disease**

·         Production of poisons, such as toxins and enzymes, that destroy cells and tissues.

·         Direct invasion and destruction of host cells.

·         Triggering responses from the host’s immune system leading to disease signs and symptoms.

**Phases of Infectious Disease**

time between infection and the appearance of signs and symptoms.

 mild, nonspecific symptoms that signal onset of some diseases.

 a person experiences typical signs and symptoms of disease.

subsidence of symptoms.

  symptoms have disappeared, tissues heal, and the body regains strength.

**Classification of Infectious Disease**

¨  By duration

·         Acute – develops and runs its course quickly.

·         Chronic – develops more slowly and is usually less severe, but may persist for a long, indefinite period of time.

·         Latent – characterized by periods of no symptoms between outbreaks of illness.

¨  By location

·         Local – confined to a specific area of the body.

·         Systemic – a generalized illness that infects most of the body with pathogens distributed widely in tissues.

¨  By timing

·         Primary – initial infection in a previously healthy person.

·         Secondary – infection that occurs in a person weakened by a primary infection.

**Influenza**

Example of an Infectious Disease – Flu. Acute contagious disease caused by the influenza virus. Respiratory tract infection, but symptoms felt throughout entire body.

Epidemics occur seasonally with low fatality; more deadly pandemics occur several times each century.

Highly changeable virus that can infect multiple species, including humans, pigs, and birds.

¨  Concern exists that current avian flu will lead to a new pandemic.

¨  Transmission of Infectious Diseases

¨  Agents that cause infectious diseases can be transmitted in many ways.

·         Through the air

·         Through contaminated food or water

·         Through body fluids

·         By direct contact with contaminated objects

·         By animal vectors such as insects, birds, bats, etc.

**Related Terms**

¨  Endemic/Enzootic: The constant presence of a disease or infectious agent within a given geographic area.

¨  Epidemic/Epizootic: The occurrence in an area of a disease or illness in excess of what may be expected on the basis of past experience for a given population (in the case of a new disease, such as AIDS, any occurrence may be considered "epidemic").

¨  Pandemic/Panzootic: A worldwide epidemic affecting an exceptionally high proportion of the global population.

¨  Example of an Infectious Disease - AIDS

¨  AIDS (Acquired Immune Deficiency Syndrome) is the disease caused by the virus called HIV (human immunodeficiency virus).

HIV attacks cells of the immune system and destroys their ability to fight infection by other agents. HIV is spread through the direct exchange of body fluids.

There is a long period of time from HIV infection to the onset of AIDS.

Anti-HIV drugs prolong the length and quality of life, but there is no vaccine or cure for AIDS.

**Other infectious diseases**

·         Severe acute respiratory diseases (avian flu) SARS

·         EBOLA

·         COVID 19 (Corona virus

Refer to latest guidelines

**Reducing the Spread of Infectious Diseases**

·         Vaccines

·         Antimicrobial drugs

·         Good personal hygiene and sanitation

·         Protection against mosquitoes

·         Quarantine

**Infectious Diseases as a Cause of Death**

¨  Infectious diseases are responsible for a quarter to a third of all deaths worldwide.

¨  Infectious diseases account for more than half of all deaths in children under the age of 5

¨  Of the top ten causes of death compiled by the World Health Organization, five are due to infectious diseases.

¨  The top single agent killers are HIV/AIDS, malaria and tuberculosis. The other top killers are lower respiratory infections and diarrheal diseases, which are caused by a variety of agents.

**Emerging Infectious Diseases**

¨  Emerging diseases are those that have recently appeared within a population, or whose incidence or geographic range is increasing rapidly.

**Diseases can emerge or re-emerge due to:**

¤  appearance of a previously unknown agent.

¤  evolution of a new infectious agent.

¤  spread of an infectious agent to a new host.

¤  spread of an infectious agent to new locations.

¤  acquisition of resistance to anti-microbial drugs.

¤  deliberate introduction into a population.

[**Re-emerging and Emerging Infectious Disease**](http://www.alertnet.org/topkillerdiseases.htm)

·         Climate Change

·         A New Factor in Infectious Disease

·         Barriers to Treatment

·         Political leadership

·         Socio-cultural factors

Biological research

**a)      Topic Summary**

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| Infectious diseases spread from one person to the other through air, contact, contaminated food, vector, sexual or transplcental. They are caused by various agents Bacteria, Viruses, Protozoa (Protists), Fungi, Helminths (Animals)  Can be prevented by immunization, antimicrobials and  hygiene. |