

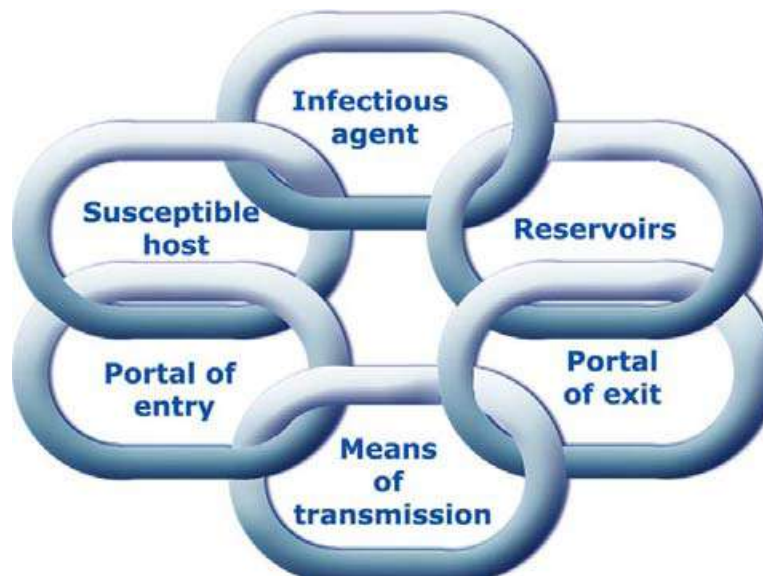
Lecture: 5

## INFECTION AND INFECTIOUS AGENTS

**Infection** : multiplication of an infectious agent within the body .

**Note** : Multiplication of normal flora of the gastrointestinal tract, skin etc, is not considered as infection, while multiplication of pathogenic bacteria (eg: salmonella species ), even if the person is asymptomatic, is deemed as infection.

### Series of Infection



#### Biologic Characteristics Of Infectious Agents :

- ✓ Infectivity.
- ✓ Pathogenicity
- ✓ Virulence
- ✓ Immunogenicity.

**Carrier or Reservoir** : A person or animal with asymptomatic infection that can be transmitted to another susceptible person or animal.

#### **Means of Transmission**

##### **1- Direct**

- Droplet
- Aerosol
- Skin to skin

##### **2- Indirect**

- Fomites (clothes, blankets, door handles etc)
- Vectors (e.g. mosquitoes)
- Food and water
- Intermediate hosts (e.g. snails)

**Invasion** : the process by which, bacteria, animal parasites, fungi, and viruses enter the host's cells or tissues and spread in the body.

**Virulence** : the quantitative ability of an agent to cause disease. Virulent agent cause disease when introduced into the host in small numbers. Virulence involves adherence, invasion, and toxigenicity.

**Pathogenicity** : the ability of a microorganism to cause a disease.

**Pathogen** : a microorganism capable of causing disease.

**Non pathogen** : A microorganism that does not cause disease, may be a part of the normal flora.

**Opportunistic Pathogen** : An agent capable of causing disease only when the host's resistance is impaired ( eg: when the patient is immunocompromised ).

**Immunogenicity** : The ability to induce an immune response in the host.

**Toxigenicity** : The ability of a microorganism to produce a toxin that contributes to the development of disease.

## **Toxins**

Many bacteria produce toxins, enzymes and pigments. Toxins and enzymes play important role in pathogenicity. Toxins are of two types:

**Exotoxins** are usually heat labile proteins secreted by certain species of bacteria which diffuse into the surrounding medium.

**Endotoxins** are heat stable lipopolysaccharide-protein complexes which form structural components of cell wall of Gram Negative Bacteria and liberated only on cell lysis or death of bacteria.

**Disease** : is a disturbance in the state of health.

Microbes cause disease in the course of stealing space, nutrients, and/or living tissue from their symbiotic hosts (e.g., us) ,To do this, microbes do most of the following:

- ✓ Gain access to the host (contamination)
- ✓ Adhere to the host (adherence) – Replicate on the host (colonization)
- ✓ Invade tissues (invasion)
- ✓ Produce toxins or other agents that cause host harm (damage).