GM/ GS/ PEADIATRICS/ GERIATRICS

What is Infection?

An Infection is the colonization of a host by microbial species.

Infecting Microbes seek to use the host's resources to reproduce, often resulting in disease.

Colloquially, infections are usually considered to be caused by microscopic organisms like viruses, prions, bacteria and viroids, though larger organisms like macro parasites and fungi can also infect.

BASIS OF CLASSIFIATION of INFETIONS

Infections are classified in multiple ways.

They are classified by the causative agent as well as by the constellation of symptoms and medical signs that are produced.

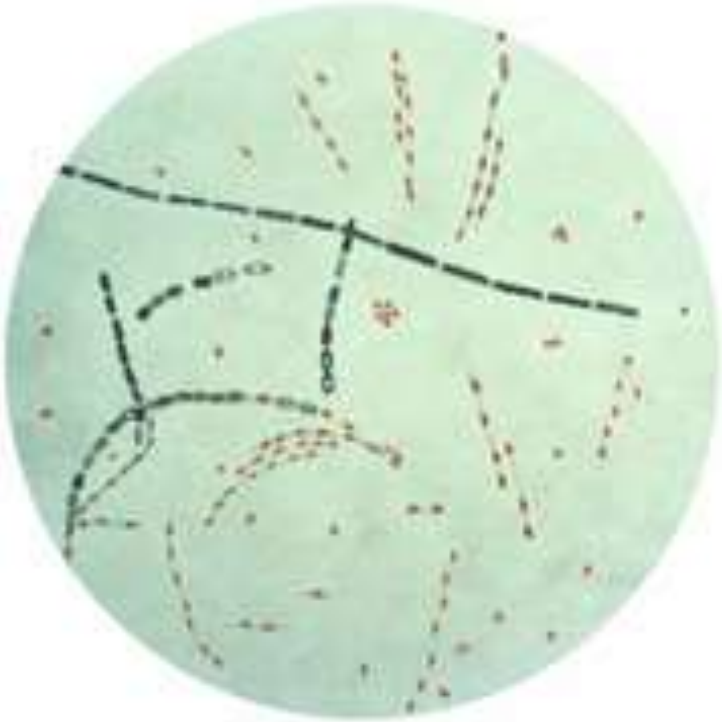
An infection that produces symptoms is an apparent infection.

An infection that is active, but does not produce noticeable symptoms, may be called in apparent, silent or subclinical.

An infection that is inactive or dormant is called a latent infection

WHAT CAUSES AN INFECTIOUS DISEASE?

Infection is caused by microorganisms like bacteria, virus, parasite, protozoa or fungus.



Principles of Infection

Transmission

Host resistance

Virulence and pathogenicity

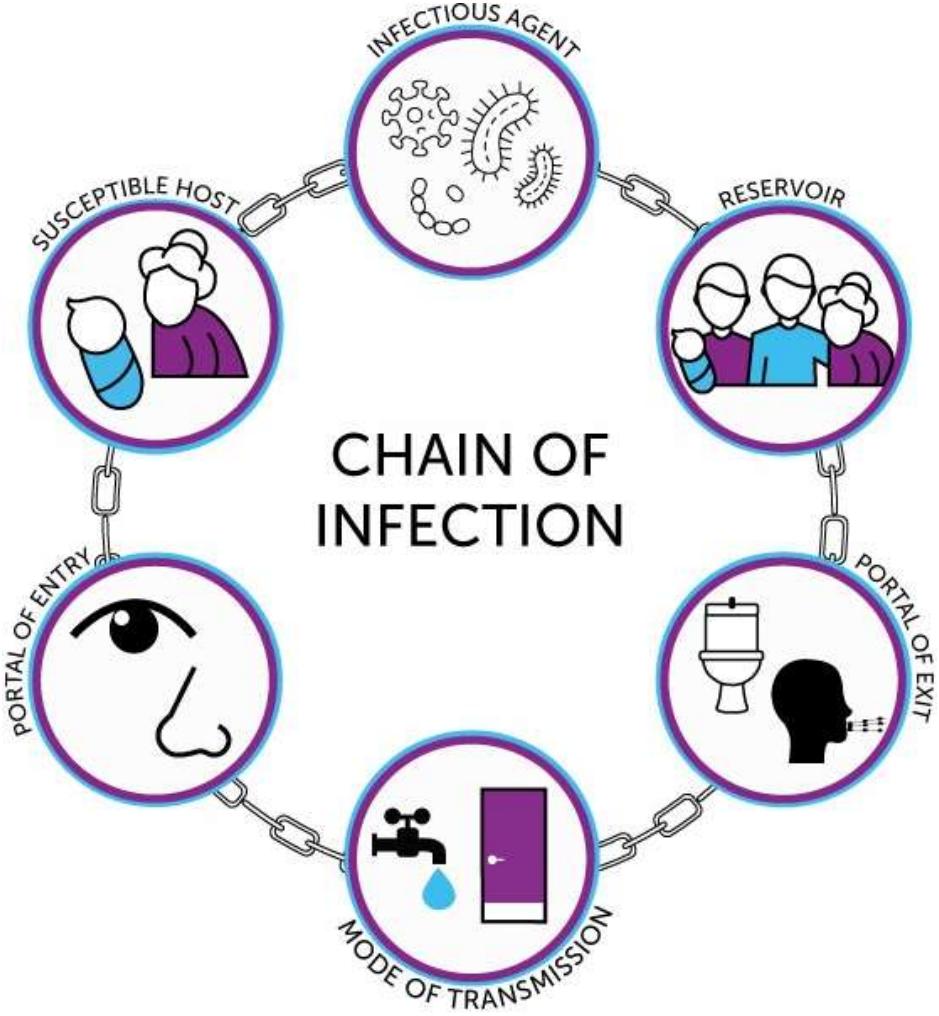
Control of transmission and infection

Development of infection

Onset and course

Clinical signs and symptoms

Diagnostic tests



CONDITIONS REQUIRED FOR THE INFECTION TO SPREAD FROM ONE PERSON TO ANOTHER

One person must be infected with a microorganism

The other person must be susceptible to infection with that microorganism.

The microorganism must be able to leave the body of the infected person and enter the body of the susceptible person.

TYPES OF INFECTION

Colonization- Infection present on surface of body

Organism propagating at a rate sufficient to maintain its numbers without producing identifiable evidence of any reaction in host.

Inapparent or subclinical infection

Organism not only multiplying but also causes a measurable reaction that is however not clinically detectable.

Symptomatic infection

Organism causes clinically detectable reaction.

TIME PARAMETERS OF INFECTION:

Latency Period: The time between invasion of infection agent and onset of infectiousness.

Incubation Period: The time between infection and onset of symptoms

Acute Infection	Chronic Infection
An infection characterized by sudden onset, rapid progression and often with severe symptoms.	An infection characterized by delayed onset and slow progression

Disease and Infectious disease:

Disease:

Any deviation from a condition of good health and well-being

Infectious disease:

A disease condition caused by the presence or growth of infectious microorganisms or parasites.

Pathogenicity and Virulence:

Pathogenicity:

The ability of a microbe to cause disease

This term is often used to describe or compare species.

Virulence:

The degree of pathogenicity in a microorganism

This term is often used to describe or compare strains within a species.

Acute infection and chronic infection

Acute Infection:

An infection characterized by sudden onset, rapid progression and often with severe symptoms.

Chronic Infection:

An infection characterized by delayed onset and slow progression.

Primary infection and Secondary Infection

Primary infection:

An infection that develops in an otherwise healthy individual.

Secondary infection:

An infection that develops in an individual who is already infected with a different pathogen

Localized Infection and Systemic Infection:

Localized Infection:

An infection that is restricted to a specific location or region within the body of the host.

Systemic Infection:

An infection that has spread to several regions or areas in the body of the host.

Clinical infection and Subclinical infection

Clinical infection

An infection with obvious observable or detectable symptoms.

Subclinical infection

An infection with few or no obvious symptoms

Opportunistic Infection

An infection caused by microorganisms that are commonly found in the host's environment.

This term is often used to refer to infections caused by organisms in the normal flora.

The Suffix – **emia**

- A suffix ‘emia’ meaning “ presence of an infectious agent”

Example:

Bacteraemia, viremia, fungemia, septiemia

The Suffix – **itis**

A suffix ‘itis’ meaning “ inflammation of”

Example:

Pharyngitis, endocarditis, gastroenteritis

Epidemiology:

The study of the transmission of disease.

Communicable disease:

Can be transmitted from one individual to another.

Contagious Disease:

A communicable disease that is easily spread from one individual to another.

Non Communicable disease:

A disease that is not transmitted from one individual to another

Endemic disease

A disease condition that is normally found in a certain percentage of a population

Epidemic disease

A disease condition present in a greater than usual percentage of a specific population

Pandemic disease

An epidemic affecting large geographical area

Reservoir of infection:

The source of an infectious agent

Carrier:

An individual who carries an infectious agent without manifesting symptoms (who can transmit the infection to another individual)

Fomites:

Any inanimate object capable of being an intermediate in the indirect transmission of an infectious agent.

DEVELOPMENT OF INFECTION

ONSET AND COURSE:

INCUBATION PERIOD	PRODROMAL PERIOD	ACUTE PERIOD
Microorganism present without any clinical signs and symptoms	The period after incubation and before the characteristic symptoms of infection occur.	Begin with an incubation period, during which the genomes replicate and the host innate responses are initiated

CLINICAL SIGNS AND SYMPTOMS

- Inflammation
- Tissue necrosis
- Lymphadenopathy
- Respiratory effects
- Fever
- Chills and sweats.
- Nausea

- Change in cough or a new cough.
- Sore throat or new mouth sore.
- Shortness of breath.
- Nasal congestion.
- Stiff neck.
- Burning or pain with urination.
- Fatigue

Stages of infectious disease

- ***Incubation period*** – no symptoms.
- ***Prodromal period*** – mild and generalized symptoms (fever, weakness, headache).
- ***Invasive stage*** – symptoms specific to the disease.
- ***Decline stage*** – symptoms subside.
- ***Convalescence*** – no symptoms, health returns to normal.

DIAGNOSTIC TESTS

Culture and stains:

- Bacteria

Blood test

- BacteriaLeukocytes
- Virus

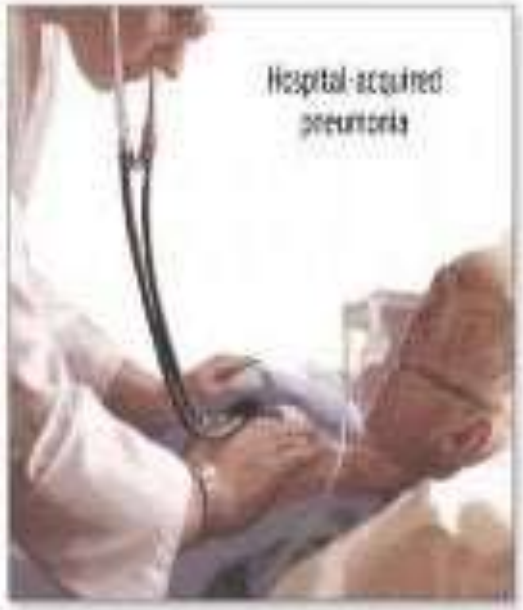
Radiological examinations

Steps to Minimize Risk of Infection

- Locate, remove reservoir host
- Block portal exit of microbes from reservoir
- Know mode(s) of transmission of specific infections
- Block portals of entry
- Cleaning
- Sterilization
- Disinfectants
- Antiseptics

Hospital acquired infections

- Infection which was neither present nor incubating at the time of admission
- Includes infection which only becomes apparent after discharge from hospital but which was acquired during hospitalisation (Rcn, 1995)
- Also called nosocomial infection



Basic steps in Prevention of Infection

- There are possible treatment and prevention to stop the infection cycle. This is through adequate hygiene, sanitary environment maintenance and health education.

Antimicrobial agents In Infection

- Anti-infective drugs such as antibiotics, antiviral, antifungal and ant tubercular drugs suppress infection. It can be administered by mouth, topically or intravenously depending on the infection extent and severity. Sometimes, if drug resistance is known, multiple drugs are used to stop drug resistance and increase drug effectiveness. Antibiotics only work for bacterial infection and have no effect on viral ones.