



Infection Control



Basic Principles of Infection Control

- How disease is transmitted and the main ways to prevent transmission.
- Microorganisms are small living organisms invisible to the naked eye
- Two types of microorganisms
 1. Pathogens
 2. Nonpathogens



What are microorganisms?

- Microorganisms are small living organisms invisible to the naked eye
- There are five classes of microorganisms
- Bacteria, protozoa, fungi, rickettsiae, and viruses.

Classifications of microorganisms

- **Bacteria** –
cocci **round** MRSA, strepthroat
bacilli **rods** i.e. TB, pertussis, botulism
spirilla **spirals** i.e. syphilis, cholera
- **Protozoa**- one cell animal-like i.e. malaria
- **Fungi** – plant-like organisms i.e. Yeasts,
molds i.e. Ringworm, thrush etc.

Microorganisms (cont.)

- **Rickettsiae**- parasitic i.e. Lice, ticks, fleas
- **Viruses** - cannot reproduce without a cell, major risk to healthcare workers and are blood borne:
- Examples of viruses, Hepatitis C, Hepatitis B, HIV.

Factors for Growth of Microorganisms

- Most prefer warm, moist or wet, dark environment i.e. the human body
- Oxygen needs vary
 - anaerobic no oxygen
 - aerobic needs oxygen

Pathogenic microorganisms

- Cause diseases in different ways

- ✓ produce poisons toxins

- ✓ allergic reactions

- ✓ attack and destroy the cells

- antibiotics are effective against bacteria
not against viruses

Classes of Diseases and Infections

- **Endogenous**

 - inside the body

 - i.e. tumors, congenital disorders

- **Exogenous**

 - outside the body

 - i.e. trauma, electric shock

Classes of Diseases and Infections (cont)

■ Nosocomial

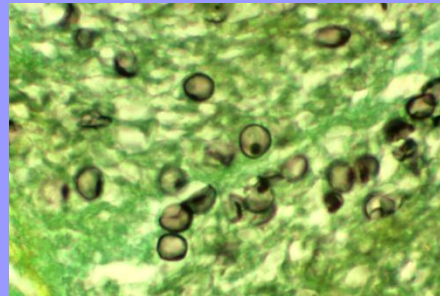
acquired in healthcare facilities

i.e. Staph MRSA, pseudomonas

■ Opportunistic

infections that only affect the immunosuppressed

i.e. Kaposi's sarcoma, pneumocystis carinii



Chain of Infection

- **Causative agent** (pathogen, bacteria, virus)
- **Reservoir** (place to live) i.e. human body.
- **Portal of exit** (the way the pathogen escapes) i.e. urine, feces, secretions
- **Mode of transmission** (transmitted to a reservoir or a host)

Direct or Indirect

Mode of Transmissions

■ Direct

person to person

sexual

contaminated hands

■ Indirect

touching contaminated equipment

breathing droplets

insect bites

Chain of Infection (cont.)

■ Portal of Entry

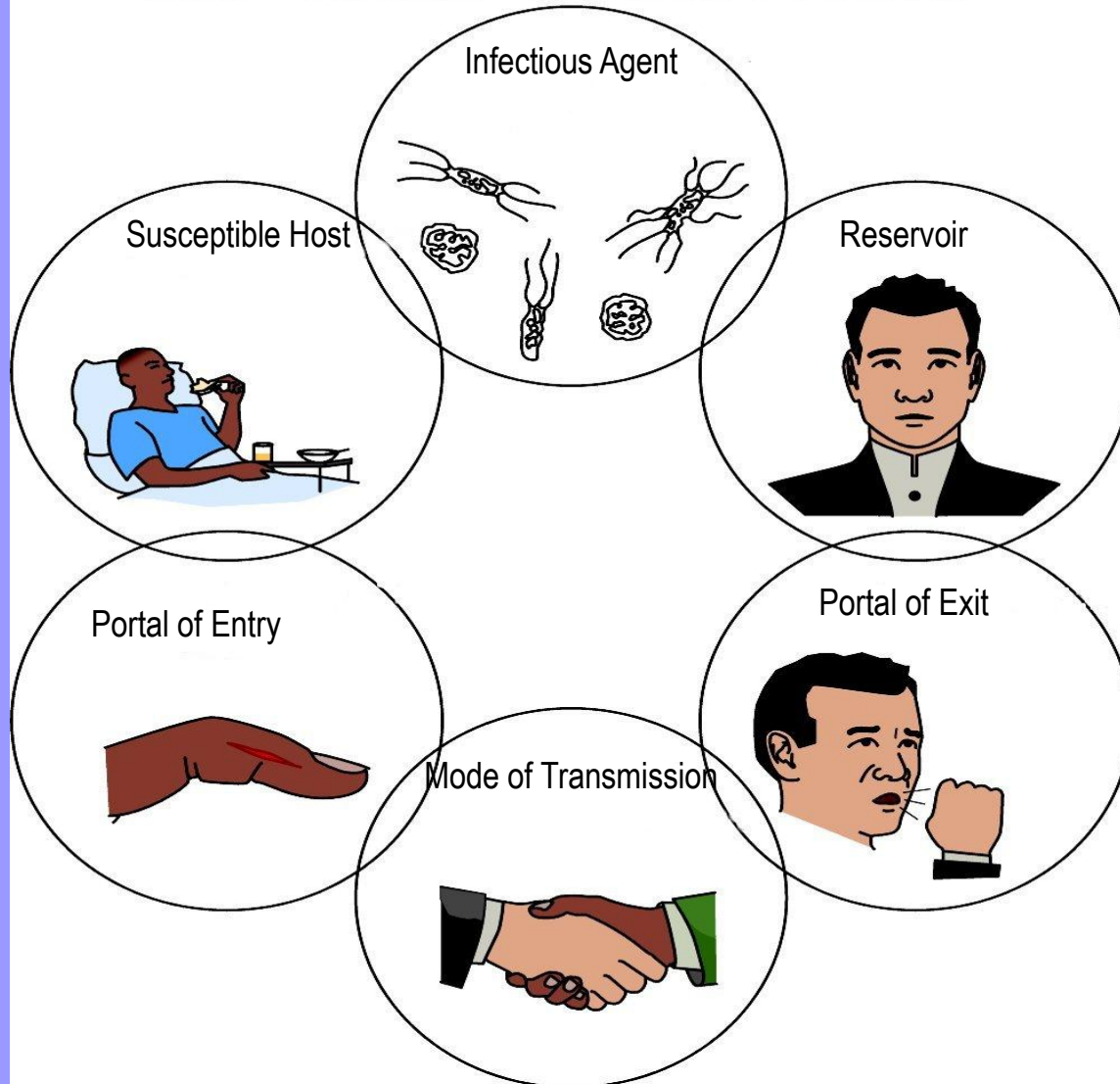
a way to enter a new host or new reservoir i.e. respiratory tract, breaks in the skin etc.

■ Susceptible Host

anyone who can contract the disease
weak immune systems

anyone with a breakdown in defense mechanisms

The Chain of Infection



Ending the chain


- Breaking the chain

 - Use aseptic technique
asepsis

 - Best is hand washing

- Levels or types of asepsis

 - antiseptics, disinfection, sterilization



Antiseptics prevent or inhibit growth of pathogenic organisms but are not effective against spores and viruses. used in healthcare alcohol and betadine

Disinfection is a process that destroys or kills pathogenic organisms. It is not always effective against spores and viruses. Chemical disinfectants are used in this process. Used only on objects not people. Ex. Include bleach and zephirin

Sterilization is a process that destroys all microorganisms, both pathogenic and nonpathogenic.