Infection Control

PTA1010

Objectives

Upon completion of this lecture the student will:

- Understand the cycle of infection
- Become familiar with the types of precautions
- Become familiar with the application and removal of protective garments

Terms to Know:

- AIDS
- Asepsis
- Contamination
- Decontamination
- Disinfection
- Health care-associated infection (HAI)
- Hepatitis
- Infection
- Isolation
- Medical asepsis
- Microorganism
- Nosocomial
- Pathogen
- Personal protective equipment (PPE)
- Respiratory hygiene
- Sepsis
- Sterile
- Sterilization
- Surgical asepsis
- Wound

OSHA Mandated Safety and Health Controls

- Training and administrative controls: *Annual training required for all healthcare professionals*
- Engineering Controls: *Handwashing stations,Needleless IV systems, Sharps Containers,Eyewash stations,Biohazard labels*
- Work Practice Controls: *provide and train employees in PPE use*

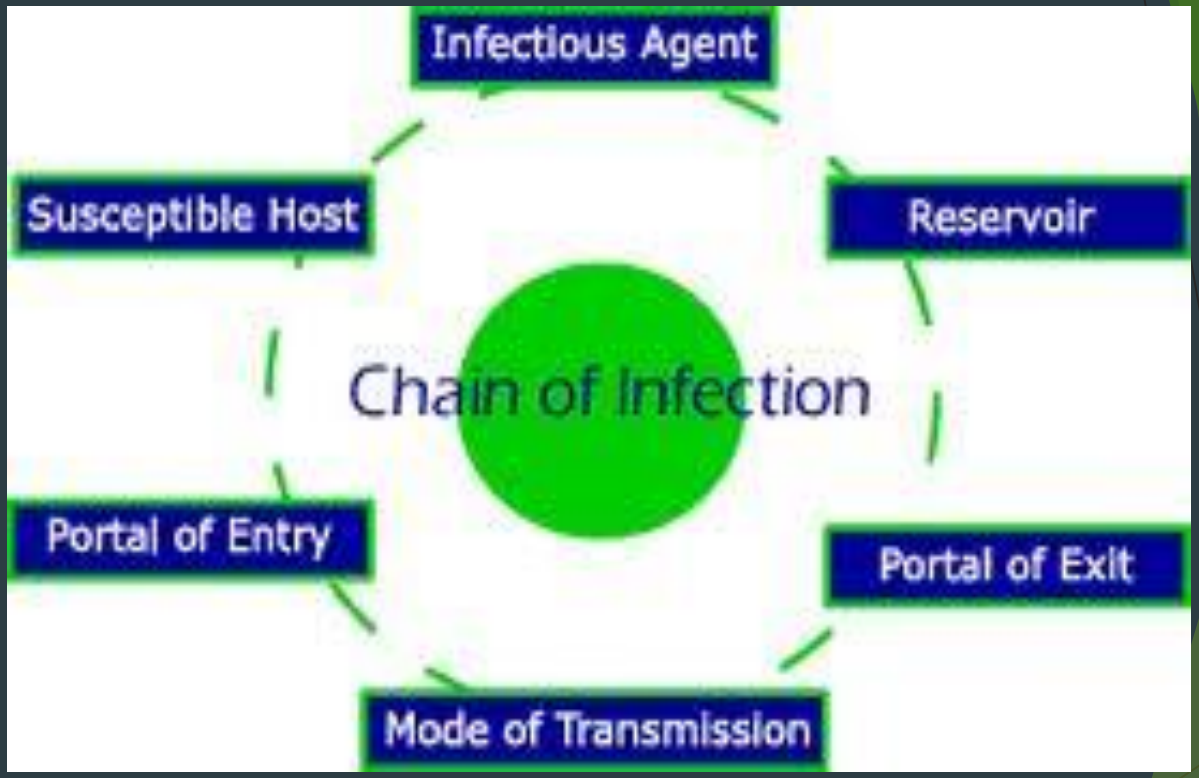
Nosocomial Infections or Healthcare associated infection" (HAI)

- Facility acquired infection
- Caregiver to patient contact
- Patient to patient contact

the infection must occur:

- up to 48 hours after hospital admission
- up to 3 days after discharge
- up to 30 days after an operation
- in a healthcare facility when someone was admitted for reasons other than the infection

Cycle of Cross-contamination



The goal is to break the cycle at any stage

Caregiver Responsibility

Caregivers provide barrier to infection by:

- Hand hygiene
- Gloves and protective equipment
- Proper removal of dressings
- Proper disposal of needles, dressings
- Using isolation techniques

Two Methods for Destroying Microorganisms

- Sterilization
  - Steam
  - Gas
  - Ultraviolet
  - Dry heat
- Altering Environment
  - Changing light
  - Oxygen
  - Changing moisture

Aseptic Techniques

- Protecting the caregiver and others
- Barriers: skin and cilia in the lungs
- Cleanliness of equipment , floors, and restroom
- Proper control of heat, light, and air
- PPE use and disposal
- Hand hygiene activities

Medical Asepsis:

- Designed to keep **pathogens in a** specific area, object, or person

Goal= CONFINE pathogen

- May **involve patient isolation**
- Use of the "clean approach"

Surgical Asepsis:

- Sterilization of all instruments, drapes, and other inert objects that may come in contact with the surgical site
- **Creating a sterile** field

Goal = ELIMINATE pathogen

- Perform a surgical hand scrub
- Donning gloves, mask or respirator, goggles or face shield and gown

Modes of Transmission of Pathogens

- Direct contact (most common)
- Air currents
- Contaminated linen or clothing
- Inadequately cleansed eating utensils, instruments, toys, or equipment
- Moisture droplets
- Routine hand hygiene techniques DO reduce cross-contamination of pathogens.

Primary Transmission Routes

- **Contact:** **direct/indirect ie linen**
- **Droplet:** **sneeze, cough, talking**
- **Airborne:** **evaporated droplet dust particle**
  - Common vehicle (food, H2O)
  - Vector (flies, rats, mosquitoes)

Standard Precautions

- Group of infection prevention practices that **apply to all patients**

- **All** blood, body fluids, excretions **except sweat**, secretions, nonintact skin, and mucous membranes may contain transmissible infectious agents.

Protection or Precautions:

- Protects persons or objects from contamination or infection

- Standard Precautions
- Transmission-Based Precautions
  - Droplet
  - Airborne
  - Contact

Know the MODE of Transmission !

Standard Precautions - Barriers

- Gloves
- Protective clothing
- Eye protection
- Face shield
- Mask
- Mouthpiece - CPR

Standard Precautions - Sharps

- Dispose of sharps in puncture proof container immediately after use
- Do not uncap or expose needles until required for use
- Do not re-cap needles
- Broken glass – use rigid board or dust pan – never pick up with gloved hands

Standard Precautions - Miscellaneous

- No eating, smoking, drinking, applying cosmetics/lip balm, work with contact lenses
- Handle linen carefully
- Report incident of contact with patient's body fluid

Transmission Precautions

https://www.cdc.gov/quarantine/index.html

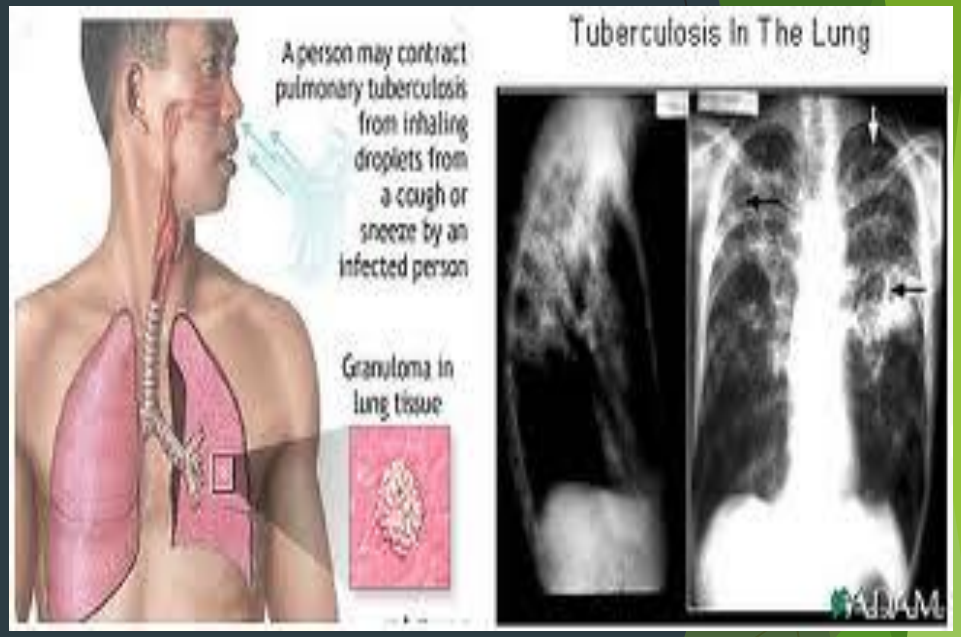
- Based upon method pathogens are transmitted
- Patient will be isolated
- Precautions used in addition to Standard Precautions

Routes of Transmission

- **Contact**: direct (person) or indirect (object)
- Respiratory **droplets**: sneezing, coughing, talking
- **Airborne**: small infectious particles in the respirable size range
- **Environmental**: contaminated water or food

Airborne Diseases: remain in air

- Measles
- Tuberculosis
- Varicella



Airborne Precautions

- Handwashing
- Mask – N-95 respirator
- Room with negative airflow
- Transport with mask

- https://www.youtube.com/watch?v=7xnr60sXnXA

Droplet Transmission Diseases:
close contact

- Meningitis
- Influenza
- Strep throat
- Pneumonia

Pneumonia

Droplet Precautions

- Handwashing
- Mask – 3 ft from patient
- Private room
- Transport with mask

Contact Transmission

- Skin infections
- GI Tract
- Wounds
- MRSA

Contact Precautions

- Handwashing with antiseptic soap
- Gloves
- Gown
- May need mask
- Private room
- Dedicated equipment

Protective Isolation (reverse)

- Used to protect a patient with condition or disease with high risk of **infection from others**:

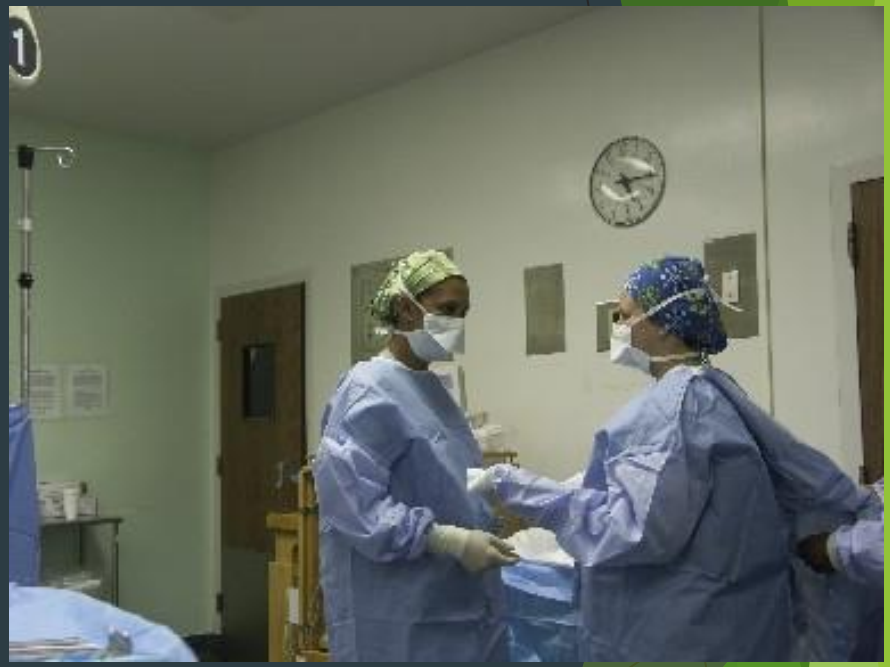
Open burns and wounds

Compromised immune system

Sepsis

Protective Isolation Precautions

- Handwashing
- Caregiver wears
  - Gown
  - Mask
  - Gloves
  - Possibly Cap



Don/Doff Protective Equipment
https://www.youtube.com/watch?v=iwvnA_b9Q8Y

Donning

1. Wash Hands
2. Gown
3. Mask/respirator
4. Goggles
5. Gloves

See pages 39-43 in Pierson

Doffing:

1. Gloves
2. Goggles
3. Gown
4. Mask/Respirator
5. Wash hands

See pages 44-45 in Pierson