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Infection Prevention and Control

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Goals

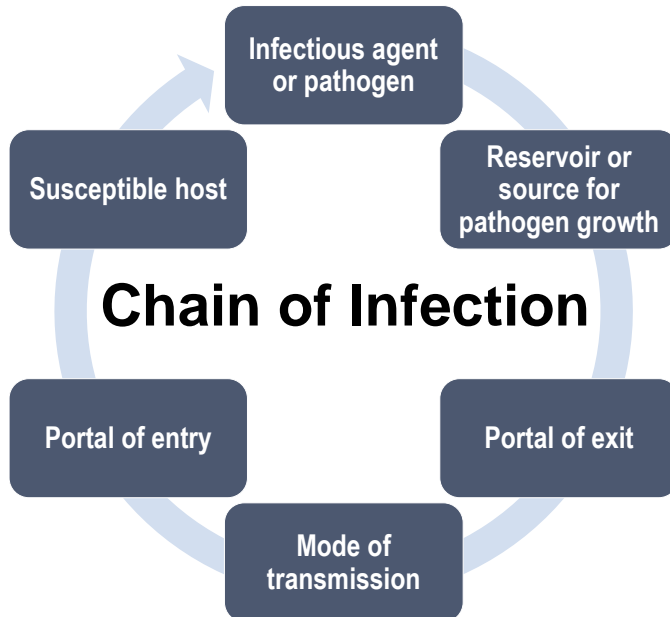
- Describe the chain of infection
- Discuss the four stages of infection
- Identify risk factors for healthcare-associated infections
- Differentiate between medical and surgical asepsis
- Describe the correct process for handwashing

Goals

- Discuss interventions for a patient with an infection
- Differentiate between disinfection and sterilization
- Discuss the different types of isolation precautions
- Describe the process for an employee exposure

Nature of Infection

- Communicable disease is the infectious process transmitted from one person to another
- A non-communicable disease is a disease that is not transmissible directly from one person to another
- If pathogens multiply and cause clinical signs and symptoms, the infection is *symptomatic*
- If clinical signs and symptoms are not present, the illness is termed *asymptomatic*



Infectious Process

- **Four stages**
 - incubation
 - prodromal
 - illness
 - convalescence
- **Localized vs. systemic infection**

Defenses Against Infection

- **Normal flora**
 - microorganisms
 - normal body flora helps to resist infection by releasing antibacterial substances and inhibiting multiplication of pathogenic microorganisms
- **Body system defenses**
 - organs

Defenses Against Infection

- **Inflammation**
 - vascular and cellular responses
 - exudates (serous, sanguineous, and purulent)
 - tissue repair
- **Signs of local inflammation and infection are identical**

Healthcare-Associated Infections

- **Results from delivery of health services in a healthcare facility**
- **Patients at greater risk for healthcare-associated infections (HAIs)**
 - multiple illnesses
 - older adults
 - poorly nourished
 - lowered resistance to infection
 - immunocompromised

Healthcare-Associated Infections

- **Types of HAIs**

- iatrogenic: from a procedure
- exogenous: from microorganisms outside of the individual
- endogenous: when the patient's flora becomes altered and an overgrowth occurs

Healthcare-Associated Infections

- **Risk factors**

- number of healthcare employees with direct contact with the patient
- types and numbers of invasive procedures
- length of stay

- **Most common sites of HAIs**

- surgical or traumatic wounds
- urinary or respiratory tracts
- bloodstream

Healthcare-Associated Infections

****HAIs are not reimbursable!!**

Assessment

- **Assessment includes a thorough investigation**
 - review of symptoms, travel history
 - immunizations
- **Early recognition of risk factors**
- **Status of defense mechanisms**
- **Patient susceptibility**
- **Clinical appearance**
- **Lab values**

Interventions

- **Health promotion: preventing an infection from developing**
- **Acute care: treating an infectious process includes eliminating the infectious organisms and supporting the patient's defenses**

Interventions

- **When implementing care, consider:**
 - **medical and surgical asepsis**
 - **control or elimination of infectious agent**
 - **control or elimination of reservoirs**
 - **control of portals of entry**
 - **control of transmission**
 - **hand hygiene**
 - **isolation precautions**

Asepsis

- **Asepsis: absence of pathogenic (disease-producing) microorganisms**
- **Aseptic technique: practices/procedures that assist in reducing the risk for infection**

Asepsis

- **Medical asepsis, or clean technique, includes procedures for reducing the number of organisms present and preventing the transfer of organisms**
- **Surgical asepsis, or sterile technique, prevents contamination of an open wound – this process serves to isolate the operative area from the unsterile environment and maintains a sterile field for surgery**

Most Important Method of Infection Prevention

Handwashing!!!

- **Improper handwashing or improper use of hand sanitizer is the #1 cause of HAIs**
- **The Centers for Disease Control and Prevention (CDC) estimates that on any given day, 1 in 31 hospital patients has an HAI**

Nail Care

- **Germs can live under artificial nails and extensions**
- **Keep tips less than 1/4 inch long**
- **Avoid artificial nails or extensions in high-risk areas**
 - **operating room**
 - **intensive care unit**
 - **newborn intensive care unit**

Soap and Water vs. Alcohol-Based Hand Sanitizer

- **Hand sanitizer is the preferred cleaning method when hands are not visibly soiled**
 - kills deadly germs
 - less time consuming
 - more accessible
 - less dryness and irritation than soap

Hand Hygiene/Handwashing

- **Perform before and after each patient contact**
- **After glove removal**
- **When hands are visibly soiled**
- **After caring for an individual with infectious diarrhea**
- **Before moving work on a soiled body site to a clean area on the same patient**
- **After contact with blood or body fluids**

Process for Handwashing

Process for Handwashing

- **Dispense paper towel**
- **Turn on faucet**
- **Apply healthcare facility-approved soap and wash vigorously for at least 20 seconds and sing “happy birthday” twice or other song lasting 20 seconds**
- **Dry hands using the dispensed paper towel**
- **Turn off the faucet using the paper towel used to dry hands and dispose of the paper towel**

Gloves

- **Not a substitute for hand hygiene**
- **Change when appropriate**

Standard Precautions

- **Prevent and control infection and its spread**
- **Apply to contact with blood, body fluid, non-intact skin, and mucous membranes for all patients**

Disinfection vs. Sterilization

- **Disinfection: a process that eliminates many or all microorganisms, with the exception of bacterial spores, from inanimate objects**
 - disinfection of surfaces
 - high-level disinfection, which is required for some items such as endoscopes
- **Sterilization: the complete elimination or destruction of all microorganisms, including spores**

Infection Prevention and Control

- **Patient safety**
 - separate personal care items
 - handling solid and fluid waste
 - wound cleaning
- **Patient education**
- **Cough etiquette**
- **Isolation and isolation precautions**
- **Surgical asepsis**

Isolation and Isolation Precautions

- **Isolation is the separation and restriction of movement of ill persons with contagious diseases**
 - **Standard Precautions**
 - **isolation precautions**
 - **airborne**
 - **droplet**
 - **contact**
 - **protective environment**

Isolation

- **Psychological implications**
- **Isolation environment**
- **Personal protective equipment (PPE)**
- **Specimen collection**
- **Bagging of trash or linen**
- **Patient transport**

Employee Exposure

- **Needlestick**
- **Infectious disease**
- **Report exposure immediately**

Case Study

- **Nurse**
- **Exposed to active tuberculosis**
- **Action?**

Case Study

- Radiologic technologist
- Moving a patient from the stretcher to the table for a procedure
- Needle in the stretcher punctures the hand of the radiologic technologist
- Action?

Case Study

- Physical therapist
- Caring for patient receiving chemotherapy
- Low neutrophil count
- Action?

References

- CDC. (2019). Isolation precautions.
<https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html>
- Harding, M., Kwong, J., Roberts, D., Hagler, D., & Reinisch, C. (2020). Lewis's Medical-surgical nursing: Assessment and management of clinical problems (11th ed.). St. Louis: Mosby.

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