Hand washing, Asepsis, Precautions and Infection Control

FN Ch 12, NICS Ch4

Week 2
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Objectives

Hand washing, Asepsis, Precautions & Infection Control

- Explain the chain of infection and methods used to break it.
- Demonstrate the correct procedure for hand washing according to the principles of medical asepsis.
- Explain the rationale behind each general principle of medical asepsis.
- Give the rationale for universal precautions/body substance isolation.
- Demonstrate correct isolation technique to protect self and others when caring for an isolated patient.
Asepsis

- Microorganisms
Asepsis

Infection Control

- This consists of the policies and procedures of a health care facility to minimize the risk of the spread of nosocomial or community-acquired infections to patients and other staff members.

- Control of infection is an important part of every action the nurse performs.
Asepsis

- **Asepsis**
  - Free of Pathogenic Microorganisms
  - Medical Asepsis
    - Inhibits growth and spread of pathogenic microorganisms
    - Clean technique
  - Surgical Asepsis
    - Destroys all microorganisms and their spores
    - Sterile technique
Infection Process

- Microorganisms must follow a definite cycle or chain to be transported and be effective in contamination and must have the following elements:
  - Infectious Agent
  - Reservoir
  - Method of Transport
  - Portal of Entry
  - Susceptible Host
The chain of infection

INFECTION CYCLE

INFECTION AGENT
Pathogenic microorganism

HOST
Another person

RESERVOIR
Infected individual animal

ENTRANCE
Mouth
Break in skin and mucous membrane

EXIT ROUTE
Secretions
Feces
Blood
Urine

METHOD OF TRANSMISSION
Hands
Contaminated food
Air droplets
Contaminated needle
Infection Process

- Infectious Agent
  - Bacteria
    - Aerobic: grows only in the presence of oxygen
    - Anaerobic: grows only in the absence of oxygen
  - Viruses
    - Smallest known agents that cause disease.
    - Infections usually self-limiting
      - Exceptions include rabies and HIV
Infection Process

- Infectious Agent (continued)
  - Fungi
    - Fungi are responsible for some of the most common diseases found in humans.
    - Many are harmless, but some are responsible for infections.
  - Protozoa
    - These single-celled animals exist everywhere in nature in some form.
    - Disease-producing protozoa are responsible for malaria, amebic dysentery, and African sleeping sickness.
Infection Process

- **Reservoir**
  - A reservoir is any natural habitat of a microorganism that promotes growth and reproduction.
  - Examples of reservoirs are soiled or wet dressings, hospital equipment, and carriers (person or animal who harbors and spreads an organism).
  - Food and proper atmosphere are required to thrive.
Infection Process

- **Exit Route**
  - A microorganism cannot cause disease in another host unless it finds a point of escape from the reservoir.
  - Human exit routes are gastrointestinal, respiratory, and genitourinary systems; tissue; and blood.
  - Handwashing can prevent the spread of microorganisms or cross-contamination.
Infection Process

- Method of Transmission
  - Once the microorganism has exited a reservoir, there are many vehicles on or by which it can travel to the next host.
  - Fomite
    - Vehicle is inanimate (nonliving) object
    - Stethoscope, thermometer, bandage scissors, etc.
  - Vector
    - Living carrier
Infection Process

- Entrance of Microorganisms
  - The microorganism must find a way to enter the susceptible host.
  - When the host’s defense mechanisms are reduced, the microorganism has a greater chance to enter.
    - Punctured skin, open wounds, accidental needle sticks
  - The skin is the first line of defense and should be kept intact, lubricated, and clean.
Infection Process

- **Host**
  - An organism in which another, usually parasitic, organism is nourished and harbored.
  - An infection will not develop unless a person is susceptible to the strength and numbers of the microorganism.
  - Immunizations have proved effective in providing additional protection against infectious disease.
Infection Process

- **Infectious Process**
  - Infections follow a progressive course.
    - Incubation period
    - Prodromal stage
    - Illness stage
    - Convalescence
  - Localized
    - Proper care controls the spread and minimizes the illness; wound infection
  - Systemic
    - Infection that affects the entire body; can be fatal
Infection Process

- Inflammatory Response
  - The body’s cellular response to injury or infection
  - Protective vascular reaction that delivers fluid, blood products, and nutrients to interstitial tissues in the area of injury
  - Neutralizes and eliminates pathogens or necrotic tissues and establishes a means of repairing body cells and tissues
Infection Process

- Inflammatory Response (continued)
  - Signs of Inflammation
    - Edema, redness, heat, pain or tenderness, and loss of function
    - Systemic signs: fever, leukocytosis, malaise, anorexia, nausea, vomiting, and lymph node enlargement
  - May be triggered by physical agents, chemical agents, or microorganisms
Nosocomial Infections

- **Nosocomial Infection**
  - One that is acquired while in a hospital or other health agency
  - Acquired at least 12 hours after admission
  - Hospital harbors microorganisms that may be highly virulent, making it a more likely place to acquire an infection
Nosocomial Infections

- **Exogenous Infection**
  - Infection caused by microorganisms from another person

- **Endogenous Infection**
  - Infection caused by the patient’s own normal microorganisms becoming altered and overgrowing or being transferred from one body site to another
Infection Control Team

- Infection Control Practitioner/Professional
- Employee Health Service
Standard Precautions

- **Handwashing**
  - This is the most important and basic preventive technique for interrupting the infectious process.
  - Wash hands before patient care; after touching blood, body fluids, secretions, excretions, and contaminated items; immediately after gloves are removed; between patient contacts; and when otherwise indicated.
Skill 12-1: Steps 17a & 17b


Performing a 2-minute handwashing.
Standard Precautions

- Gloving
  - Don gloves if there is any possibility of contact with infectious material.
Skill 12-2: Steps 6 & 7

Gloving.

Standard Precautions

- Gowning
  - Wear a gown to protect skin and prevent soiling of clothing during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions or cause soiling of clothing.
Removing a gown

Removing gown after isolation.

(From Elkin, M.K., Perry, A.G., Potter, P.A. [2004]. *Nursing interventions and clinical skills* [3rd ed.]. St. Louis: Mosby.)
Standard Precautions

- **Mask/Protective Eyewear**
  - Protects the wearer from inhaling microorganisms that travel on airborne droplets.
  - Prevents inhaling pathogens if resistance is reduced or during transport to another area.
  - Discourages the wearer from touching the mouth, nose, and eyes and from transmitting infectious material.
Skill 12-4: Steps 2 & 5


Donning a mask.
Nurse wearing protective goggles and mask

Standard Precautions

- Disposal of Contaminated Equipment
- Double Bagging
Isolation Technique

- Basic Principles
  - Handwashing
  - Appropriate use of protective barriers
  - Proper cleaning/disposal of equipment
  - Mask for patient during transport
  - Private or isolation room
    - Consider all articles or equipment infected
Isolation Technique

- The CDC issued isolation guidelines that contain two tiers of approach.
  - **First Tier**
    - STANDARD PRECAUTIONS
  - **Second Tier**
    - Airborne
    - Droplet
    - Contact precautions
Prevention of Infection in the Home Setting

- Patient Teaching for Infection Control
  - Review basic principles of hygiene
  - General guidelines for hygiene
  - The nature of the infection
  - Transmission of infection
HANDWASHING SKILLS & INFECTIOUS CHAIN WORKSHEET