UNIT 1      SAFE, EFFECTIVE CARE ENVIRONMENT
Section      Safety and Infection Control
Chapter 10  Medical and Surgical Asepsis

Overview
- Asepsis – The absence of illness-producing micro-organisms. Asepsis is maintained through the use of aseptic technique with hand hygiene as the primary behavior associated with asepsis/aseptic technique. There are two types of asepsis:
  - Medical asepsis – The use of precise practices to reduce the number, growth, and spread of micro-organisms from an object, person, or area. Previously referred to as “clean technique,” medical asepsis is used for administering oral medication, managing nasogastric tubes, providing personal hygiene, and performing many other common nursing tasks.
  - Surgical asepsis – The use of precise practices to eliminate all micro-organisms from an object or area. Also known as “sterile technique,” surgical asepsis is used for parenteral medication administration, insertion of urinary catheters, surgical procedures, sterile dressing changes, and many other common nursing procedures.
- Before beginning any task or procedure that requires aseptic technique, health care team members must check for latex allergies. If the client or any member of the team has a latex allergy, latex-free gloves, equipment, and supplies must be used.

Practices that Promote Medical Asepsis
- The No. 1 measure to reduce the growth and transmission of infectious agents is hand hygiene. The Centers for Disease Control and Prevention (CDC) states that “hand hygiene has been cited frequently as the single most important practice to reduce the transmission of infectious agents in health care settings. The term “hand hygiene” refers to both handwashing with an antimicrobial or plain soap and water as well as the use of alcohol-based products such as gels, foams, and rinses.”
  - The three essential components of handwashing include:
    - Soap
    - Water
    - Friction
  - All health care personnel must perform hand hygiene, either with an alcohol-based product or with soap and water, before and after every client contact, after removing gloves, after contact with body fluids, and after using the restroom. When hands are visibly soiled, handwashing with soap and water is indicated.
Perform hand hygiene using recommended antiseptic solutions when caring for clients who are immunocompromised or have infections with multidrug-resistant or extremely virulent microorganisms. These include chlorhexidine, povidone-iodine, or PCMX (parachlorometaxylenol).

Hand hygiene is also recommended after contact with anything in the client’s room and after touching any contaminated items, whether or not gloves are worn. Hand hygiene must be performed at once after gloves are removed and when otherwise indicated to avoid transfer of micro-organisms to other clients or environments. Performing hand hygiene may be necessary between tasks and procedures on the same client to prevent cross-contamination of different body sites.

Handwashing must be done for at least 15 seconds to remove transient flora from the hands and up to 2 min when hands are more soiled. After washing, hands should be dried with a clean paper towel before turning off the faucet. If the sink does not have foot or knee pedals for turning off the water, using a clean, dry paper towel to turn off the faucet(s) is recommended.

For hand hygiene with an alcohol-based product, dispense the manufacturer’s recommended amount of product (usually 3 to 5 mL) in the palm of the hand. Rub vigorously, remembering to cover all surfaces of both hands and fingers. With an alcohol rub, continue to rub until both hands are completely dry.

Additional examples of practices that reduce the growth and spread of micro-organisms are changing linens daily, cleaning floors and the client’s bedside stand, and separating clean from contaminated materials.

Use masks, gloves, gowns, and protective eyewear to help control the contact and spread of micro-organisms to both the health care staff and the client.

Do not place items on the floor in the client’s environment (even soiled laundry). The floor is considered “grossly” contaminated.

Educate all clients on the importance of covering their mouths and noses when coughing or sneezing, using and disposing of tissues, and handwashing thoroughly to prevent spraying and spreading droplet infections.

Do not shake linens, because doing so can spread micro-organisms in the air.

Clean the least soiled areas first to prevent moving more contaminants into the cleaner areas.

Use plastic bags for moist, soiled items, following facility protocol for bag selection, to prevent further contamination of items or of individuals handling the soiled items. Put all soiled items directly into the appropriate receptacle to avoid handling soiled items more than once.

Pour any liquids used for client care directly into the drain, and avoid splattering that can spread droplets.
All health care staff should:

- Follow facility protocols for isolation and protection.
- Wash their hair frequently and keep it short or pulled back to prevent contamination of the care area or the client.
- Not wear artificial nails while providing care and should keep natural nails short and clean. The area around and under the nails can harbor micro-organisms.
- Remove jewelry from hands and wrists to facilitate hand disinfection.

Practices that Maintain a Sterile Field

- Prolonged exposure to airborne micro-organisms can make sterile items nonsterile.
  - Avoid coughing, sneezing, and talking directly over a sterile field.
  - Air movement should be controlled by special ventilation.

- Only sterile items may be in a sterile field.
  - The outer wrappings and 1-inch edges of packaging that contains sterile items are not sterile. The inner surface of the sterile drape or kit, except for that 1-inch border around the edges, is the sterile field to which additional sterile items may be added. To position the field on the table surface, it is acceptable to grasp the 1-inch border before donning sterile gloves. Any object that comes into contact with the 1-inch border must be discarded.
  - Touch sterile materials only with sterile gloves.
  - Any object held below the waist or above the chest is considered contaminated.
  - Sterile materials may touch other sterile surfaces or materials; however, contact with nonsterile materials at any time renders a sterile area contaminated, no matter how short the contact.

- Microbes can move by gravity from a nonsterile item to a sterile item.
  - Do not reach across or above a sterile field.
  - Do not turn your back on a sterile field.
  - Hold items to be added to a sterile field at a minimum of 6 inches above the field.

- Any sterile, non-waterproof wrapper that comes in contact with moisture becomes nonsterile by a wicking action that allows microbes to travel rapidly from a nonsterile surface to the sterile surface.
  - Keep all surfaces dry.
  - Discard any sterile packages that become wet.
Nursing Interventions

- **Equipment**
  - Select a clean area in the client’s environment (a bedside stand) to set up the sterile field.
  - Check that all sterile packages (additional dressings, sterile bowl, sterile gloves, and solution) are dry and have a future expiration date.
  - Make sure an appropriate waste receptacle is nearby.

- **Procedure**
  - Perform hand hygiene.
  - Open the plastic covering of the package per the manufacturer’s directions, slipping the package onto the center of the workspace with the top flap of the wrapper opening away from the body.
  - Reach around the package to open the top flap of the package, grasp the outside flap between the thumb and the index finger, and unfold the top flap away from the body.
  - Next, open the side flaps, using the right hand for the right flap and the left hand for the left flap.
  - Grasp the last flap and turn it down toward the body.
  - Additional sterile packages
    - Open next to the sterile field by holding the bottom edge with one hand and pulling back on the top flap with the other hand. Place the packages that are to be used last furthest from the sterile field, and open these first.
    - Add them directly to the sterile field. Lift the package from the dry surface, holding it 15 cm (6 in) above the sterile field, pulling the two surfaces apart, and dropping it onto the sterile field.
  - Pour sterile solutions by:
    - Removing the bottle cap.
    - Placing the bottle cap face up on the surface.
    - Holding the bottle with the label in the palm of the hand so that the solution does not run down the label.
    - First pouring a small amount (1 to 2 mL) of the solution into an available receptacle.
    - Pouring the solution onto the dressing or site without touching the bottle to the site.
  - Once the sterile field is set up, don sterile gloves.
Sterile gloving includes opening the wrapper and handling only the outside of the wrapper. Don gloves by using the following steps.

- With the cuff side pointing toward the body, use the left hand and pick up the right-hand glove by grasping the folded bottom edge of the cuff and lifting it up and away from the wrapper.
- While picking up the edge of the cuff, pull the right glove onto the hand.
- With the sterile right-gloved hand, place the fingers of the right hand inside the cuff of the left glove, lifting it off the wrapper, and put the left hand into it.
- When both hands are gloved, adjust the fingers in the gloves if necessary.
- During that time, only the sterile gloved hand can touch the other sterile gloved hand.
- At the close of the sterile procedure, or if the gloves tear, remove the gloves. Take them off by grasping the outer part of one glove at the wrist, pulling the glove down over the fingers and into the hand that is still gloved. Then, place the ungloved hand inside the soiled glove and pull the glove off so that it is inside out and only the clean inside part is exposed. Discard into an appropriate receptacle.
CHAPTER 10: MEDICAL AND SURGICAL ASEPSIS

Application Exercises

1. When entering a client’s room to change a surgical dressing, a nurse notes that the client is coughing and sneezing. When preparing the sterile field, it is important that the nurse
   A. keep the sterile field on the far side of the client’s room away from the bedside.
   B. instruct the client to refrain from coughing and sneezing during the dressing change.
   C. place a mask on the client to limit the spread of micro-organisms into the surgical wound.
   D. keep a box of tissues nearby for the client to use during the dressing change.

2. A nurse teaching a group of personal care assistants should emphasize that the most effective way to decrease the spread of infection is by
   A. wearing gloves with all clients.
   B. placing clients with infection in isolation.
   C. wearing gowns and masks at all times when in contact with a client’s skin.
   D. performing hand hygiene.

3. While wearing sterile gloves, a nurse can touch any
   A. object on the sterile field.
   B. object on the bedside stand.
   C. part of the client’s gown.
   D. sterile object below the waist.

4. Match each of the following practices to the best example.
   ______ Medical asepsis practice   A. A nurse wears gloves each time he empties a bedpan.
   ______ Standard precautions       B. A nurse drops a sterile dressing on the floor.
   ______ Sterile field maintenance C. A nurse keeps her sterile hands above her waist.
   ______ Contamination             D. A nurse wipes off the client’s bedside table.

5. Which of the following statements about surgical asepsis and a sterile field are correct? (Select all that apply.)
   ______ The nurse should turn her back on the sterile field if she needs to cough.
   ______ The 1-inch edge around a sterile field is also considered sterile.
   ______ A sterile item can touch another sterile item without contaminating it.
   ______ Sterile items must remain above the waist.
   ______ Surgical asepsis is also called “sterile technique.”

6. Describe the proper procedure for pouring a sterile solution.
CHAPTER 10: MEDICAL AND SURGICAL ASEPSIS

Application Exercises Answer Key

1. When entering a client’s room to change a surgical dressing, a nurse notes that the client is coughing and sneezing. When preparing the sterile field, it is important that the nurse

   A. keep the sterile field on the far side of the client’s room away from the bedside.
   B. instruct the client to refrain from coughing and sneezing during the dressing change.
   C. place a mask on the client to limit the spread of micro-organisms into the surgical wound.
   D. keep a box of tissues nearby for the client to use during the dressing change.

   Placing a mask on the client prevents contamination of the surgical wound during the dressing change. It would be difficult for the nurse to maintain a sterile field on the far side of the room away from the bedside. The client may be unable to refrain from coughing and sneezing during the dressing change. Keeping tissues close by for the client to use still allows contamination of the surgical wound.

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2. A nurse teaching a group of personal care assistants should emphasize that the most effective way to decrease the spread of infection is by

   A. wearing gloves with all clients.
   B. placing clients with infection in isolation.
   C. wearing gowns and masks at all times when in contact with a client’s skin.
   D. performing hand hygiene.

   Frequent hand hygiene is the best way to prevent the spread of infection. Wearing gloves is appropriate when in contact with any client’s blood, body fluids, or nonintact skin, but hand hygiene is still important after removing the gloves. Placing clients with infections in isolation is important for certain types of infections, but it neglects the essential aspect of hand hygiene. Wearing gowns and masks is not necessary if the client’s skin is intact.

NCLEX® Connection: Safety and Infection Control: Standard/Transmission-Based/Other Precautions
3. While wearing sterile gloves, a nurse can touch any

A. object on the sterile field.
B. object on the bedside stand.
C. part of the client's gown.
D. sterile object below the waist.

To maintain a sterile field, the nurse can only touch other sterile items when wearing sterile gloves without causing contamination. Touching an object on the bedside stand, touching the client's gown, and holding any sterile object below the waist makes the sterile field no longer sterile.

NCLEX® Connection: Safety and Infection Control: Standard/Transmission-Based/Other Precautions

4. Match each of the following practices to the best example.

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<tr>
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<th>Medical asepsis practice</th>
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NCLEX® Connection: Safety and Infection Control: Standard/Transmission-Based/Other Precautions

5. Which of the following statements about surgical asepsis and a sterile field are correct? (Select all that apply.)

   ______  The nurse should turn her back on the sterile field if she needs to cough.
   ______  The 1-inch edge around a sterile field is also considered sterile.
   X       A sterile item can touch another sterile item without contaminating it.
   X       Sterile items must remain above the waist.
   X       Surgical asepsis is also called “sterile technique.”

A sterile item can touch another sterile item without contaminating it. To maintain the sterility of an item, it must stay above the waist, and surgical asepsis is also called “sterile technique.” If the nurse turns her back on the sterile field, the sterile field is considered contaminated. The nurse should step away but continue to face the sterile field. The 1-inch edge around a sterile field is not considered sterile.

NCLEX® Connection: Safety and Infection Control: Standard/Transmission-Based/Other Precautions
6. Describe the proper procedure for pouring a sterile solution.

   Remove the bottle cap and place the bottle cap face up on the surface.

   Hold the bottle with the label in the palm of the hand so that the solution does not run down the label.

   Pour a small amount of the solution into an available receptacle.

   Pour the solution onto the dressing or site without touching the bottle to the site.

   **NCLEX® Connection: Safety and Infection Control: Standard/Transmission-Based/Other Precautions**