Objectives

The novice perioperative team member will be able to:
• Define difference between asepsis technique and sterile technique
• Identify ways to prevent health care-associated infections
• Identify factors of effective surgical hand cleansing
• Identify the principles of gowning and gloving
• Correctly perform, by return demonstration, surgical gowning and gloving techniques

Terms

• **Antiseptic** – A product with antimicrobial activity applied to the skin to reduce the number of microbial flora
• **Asepsis** – The absence of all pathogenic microorganisms; synonym: sterile
• **Aseptic Practice** – Patterns of behavior and processes that are implemented to prevent microbial contamination
• **Transient organism** – Microorganisms that colonize the superficial layers of the skin; easier to remove during hand washing
• **Resident organisms** – Bacteria seated in the deeper layers of the skin and are more difficult to remove
Hand Hygiene

• “Hand hygiene” is used to describe all measures related to hand cleansing and surgical hand scrubs
• Recognized as a primary method of decreasing health care-associated infections
• Health care-associated infections results in:
  • Increased morbidity and mortality
  • Escalated cost of care
  • Prolonged length of stay
  • Increased pain and suffering

Hand Hygiene

• Most effective way to prevent & control infections
  • Hand cleansing
  • Surgical hand scrubs
• Hand cleansing uses:
  1. Soap and water
  2. Antiseptic and water
  3. Antiseptic hand rub if visible soil is not present
• Surgical hand scrub uses:
  1. Water-aided brushless scrubs
  2. Waterless brushless scrubs
  3. Traditional water-aided sponge hand scrub

Surgical Hand Scrubs

• A systematic washing and scrubbing of the hand and forearms using especially developed techniques
• A process to destroy transient microorganisms and inhibit the growth of resident microorganism
Surgical Hand Scrubs

Factors affecting the effectiveness of surgical hand antisepsis:

- Preparation before cleansing
- Choice of antiseptic solution
- Cleansing method
- Duration of hand cleansing

Preparation before Cleansing

1. Surgical mask with eye protection
   - Covers nose and mouth
   - Worn when anticipated contact with blood & body fluids
2. Head coverings
   - Completely covers ears, scalp, skin, sideburns, & nape of the neck
3. Shoes
   - Clean & worn only in OR

4. Personal Clothing
   - Confined within scrubs
5. Jewelry – rings, watches, and bracelets
   - Harbors microorganisms - more rings, more germs
   - Strong link between rings & contamination of hands
   - Remove watches & bracelets before washing – less likely to wash wrist if wearing
6. Lotions
   - Over the counter anionic-based ingredient interferes with the residual effect of CHG
   - Petroleum degrades latex
Preparation before Cleansing

7. Remove …
   • Nail polish*
     1. Obscures the subungual space
     2. Reduces the likelihood of careful cleansing
     3. Chipped nail polish may harbor pathogens
   • Artificial nails, including: extensions, tips, gel, acrylic overlays, resin wraps, or acrylic fingernails
     1. Increases the microbial load on hands
     2. May interfere with bacterial removal during hand washing and hand scrubs

Choices of Antiseptic Solutions

Performance Characteristics
1. Antimicrobial Action
   • Broad spectrum to remove transient organisms and resident organisms
2. Persistent Activity
   • Create film to provide protection against resident microbes
3. Safety
   • Non-irritating and non-sensitizing
4. Acceptance
   • Doesn’t work if it is not used

Different Forms
1. Traditional water-aided impregnated scrub brushes/sponges
2. Alcohol-based brushless scrubs

Choice of Antiseptic Solution

ALCOHOLS
• Antimicrobial against all microorganisms
• Nontoxic but has a drying effect on the skin

CHOLORHEXIDINE GLUCONATE (CHG)
• Effective against gram-positive and negative bacteria, fungal, and viral microorganisms
• Reacts poorly against TB microorganisms
• Antimicrobial residues accumulate on the skin with repeated use
• Residual effect maintained for >6 hours
• Ototoxic and irritating if splashed in the eyes
Choice of Antiseptic Solution

IODOPHORS

• Intermediate-acting antimicrobial agents against gram-positive and negative, TB, fungal, and viral microorganisms
• Minimal residual effect, not sustained for a prolong period (over 6 hours)
• Irritating to the skin, do not use if allergic to iodine

PARACHLOROMETAXYLENOL (PCMX)

• Effective against gram-positive, fair against gram-negative bacterial and viral microorganisms
• Bonds immediately with the dermis and not denatured by blood and tissue, no tissue contraindications
• Not abundance of data regarding this prep agent

Cleansing Method

Traditional Hand Scrub

• Don’t use the brush – may damage skin and increase bacterial shedding from hands
• Visualize each finger, hand, and arm having 4 sides
• Wash all sides effectively

Hand Scrub Videos

Alcohol-based Hand Rub

• Hands must be clean and dry prior to applying hand rub
• Use sufficient product to keep hands and forearms wet throughout the surgical hand prep
• Clean forearms first than focus on hands
• Keep hands and forearms higher than elbows and away from surgical attire

https://youtu.be/A9zlYgI7Tk

https://youtu.be/AcmEz8Pf38
Principles of Donning a Sterile Gown

- Don sterile gowns and gloves away from main instrument table
- Sterile gloves should not be opened directly on top of the sterile gown
- Hands and arms should be completely dry before donning a sterile gown
- Only the inside of the sterile should be touched when it is picked up for donning
- The sterile glove wrapper should not be touched until the sterile gown has been donned
Principles of Donning Sterile Gloves

- Sterile gloves should not be opened directly on top of the sterile gown
- The sterile glove wrapper should not be touched until the sterile gown has been donned
- Once hands pass through and beyond the cuff the sleeve cuffs is contaminated
- Sleeve cuff should be completely covered by sterile gloves and should not be exposed
- Scrubbed team members should wear two pairs of surgical gloves, one over the other
1. With cuff of gown over hands pick up glove.

2. Place thumb of glove in palm with glove fingers toward shoulder. Anchor glove cuff with thumb.

3. Pull glove cuff over finger tips. Slide hand through cuff into glove. Repeat to glove other hand.

Grasp belt cord with both hands. Pull left cord out of belt card.

Hand belt card to circulator and turn to left.

Grasp tie from belt card and secure tie at waist.

Gowning and Gloving Video

https://youtu.be/eqwdB5cU1I

https://youtu.be/Pb6hVY9Q1i4
Sterile Gown Considerations

- Only front is sterile from the chest to the level of the sterile field.
- Sleeves are sterile from the cuff to two(2) inches above the elbow.

Let's Practice!

References