1.5: Surgical Asepsis and the Principles of Sterile Technique

Surgical Asepsis

Asepsis refers to the absence of infectious material or infection. Surgical asepsis is the absence of all microorganisms within any type of invasive procedure. Sterile technique is a set of specific practices and procedures performed to make equipment and areas free from all microorganisms and to maintain that sterility (BC Centre for Disease Control, 2010). In the literature, surgical asepsis and sterile technique are commonly used interchangeably, but they mean different things (Kennedy, 2013). Principles of sterile technique help control and prevent infection, prevent the transmission of all microorganisms in a given area, and include all techniques that are practised to maintain sterility.

Sterile technique is most commonly practised in operating rooms, labour and delivery rooms, and special procedures or diagnostic areas. It is also used when performing a sterile procedure at the bedside, such as inserting devices into sterile areas of the body or cavities (e.g., insertion of chest tube, central venous line, or indwelling urinary catheter). In health care, sterile technique is always used when the integrity of the skin is accessed, impaired, or broken (e.g., burns or surgical incisions). Sterile technique may include the use of sterile equipment, sterile gowns, and gloves (Perry et al., 2014).

Sterile technique is essential to help prevent surgical site infections (SSI), an unintended and oftentimes preventable complication arising from surgery. SSI is defined as an “infection that occurs after surgery in the area of surgery” (CDC, 2010, p. 2). Preventing and reducing SSI are the most important reasons for using sterile technique during invasive procedures and surgeries.
Principles of Surgical Asepsis

All personnel involved in an aseptic procedure are required to follow the principles and practice set forth by the Association of periOperative Registered Nurses (AORN). These principles must be strictly applied when performing any aseptic procedures, when assisting with aseptic procedures, and when intervening when the principles of surgical asepsis are breached. It is the responsibility of all health care workers to speak up and protect all patients from infection. See Checklist 9 for the principles of sterile technique.

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Checklist 9: Principles of Sterile Technique

Disclaimer: Always review and follow your hospital policy regarding this specific skill.

Safety considerations:

- Hand hygiene is a priority before any aseptic procedure.
- When performing a procedure, ensure the patient understands how to prevent contamination of equipment and knows to refrain from sudden movements or touching, laughing, sneezing, or talking over the sterile field.
- Choose appropriate PPE to decrease the transmission of microorganisms from patients to health care worker.
- Review hospital procedures and requirements for sterile technique prior to initiating any invasive procedure.
- Health care providers who are ill should avoid invasive procedures or, if they can’t avoid them, should double mask.

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Steps | Additional Information
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1. All objects used in a sterile field must be sterile. | Commercially packaged sterile supplies are marked as sterile; other packaging will be identified as sterile according to agency policy. Check packages for sterility by assessing intactness, dryness, and expiry date prior to use. Any torn, previously opened, or wet packaging, or packaging that has been dropped on the floor, is considered non-sterile and may not be used in the sterile field.
2. A sterile object becomes non-sterile when touched by a non-sterile object. | Sterile objects must only be touched by sterile equipment or sterile gloves.
Whenever the sterility of an object is questionable, consider it non-sterile.

Fluid flows in the direction of gravity. Keep the tips of forceps down during a sterile procedure to prevent fluid travelling over entire forceps and potentially contaminating the sterile field.

3. Sterile items that are below the waist level, or items held below waist level, are considered to be non-sterile.

Keep all sterile equipment and sterile gloves above waist level.

Table drapes are only sterile at waist level.

4. Sterile fields must always be kept in sight to be considered sterile.

Sterile fields must always be kept in sight throughout entire sterile procedure.

Never turn your back on the sterile field as sterility cannot be guaranteed.

5. When opening sterile equipment and adding supplies to a sterile field, take care to avoid contamination.

Set up sterile trays as close to the time of use as possible.

Stay organized and complete procedures as soon as possible.

Place large items on the sterile field using sterile gloves or sterile transfer forceps.

Sterile objects can become non-sterile by prolonged exposure to airborne microorganisms.

6. Any puncture, moisture, or tear that passes through a sterile barrier must be considered contaminated.

Keep sterile surface dry and replace if wet or torn.

7. Once a sterile field is set up, the border of one inch at the edge of the sterile drape is considered non-sterile.

Place all objects inside the sterile field and away from the one-inch border.

8. If there is any doubt about the sterility of an object, it is considered non-sterile.

Known sterility must be maintained throughout any procedure.

9. Sterile persons or sterile objects may only contact sterile areas; non-sterile persons or items contact only non-sterile areas.

The front of the sterile gown is sterile between the shoulders and the waist, and from the sleeves to two inches below the elbow.

Non-sterile items should not cross over the sterile field. For example, a non-sterile person should not reach over
When opening sterile equipment, follow best practice for adding supplies to a sterile field to avoid contamination. Do not place non-sterile items in the sterile field.

Do not sneeze, cough, laugh, or talk over the sterile field. Maintain a safe space or margin of safety between sterile and non-sterile objects and areas. Refrain from reaching over the sterile field. Keep operating room (OR) traffic to a minimum, and keep doors closed. Keep hair tied back. When pouring sterile solutions, only the lip and inner cap of the pouring container is considered sterile. The pouring container must not touch any part of the sterile field. Avoid splashes.

Data source: Kennedy, 2013; Infection Control Today, 2000; ORNAC, 2011; Perry et al., 2014; Rothrock, 2014

Critical Thinking Exercises

1. When should a sterile field be opened (under normal circumstances)?
2. What part of the sterile field is considered non-sterile?