

STERILE TECHNIQUE: AN INTRODUCTION



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STUDY GUIDE

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2170 South Parker Road, Suite 400

Denver, CO 80231-5711

(800) 755-2676

www.aorn.org

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LEARNING OUTCOME

After completing this study guide and viewing the accompanying video, the perioperative registered nurse (RN) and other perioperative team members will have increased their knowledge of evidence-based, best practices for sterile technique. The perioperative RN will be able to apply these practices in the clinical setting to help minimize the risk for surgical site infections and to promote patient safety.

EDUCATIONAL OUTCOMES

The participant will be able to

- discuss the rationale for using sterile technique to establish the sterile field,
- perform surgical hand antisepsis and don sterile surgical attire before preparing the sterile field,
- use sterile drapes to establish the sterile field,
- implement appropriate isolation techniques,
- transfer items to the sterile field, and
- maintain the sterile field.

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INTRODUCTION

All health care professionals involved in operative or other invasive procedures have a responsibility to provide a safe environment for patient care.¹ This responsibility includes taking measures to minimize the risk for surgical site infections (SSIs). Health care–associated infections are a serious issue. They negatively affect patient outcomes in many ways, including increased pain, increased use of antibiotics, longer hospital stays, delayed wound healing, and even death.² Health care–associated infections can also significantly increase medical costs.³ Surgical site infections occur more often than people might think. As many as one in 20 surgical patients develops an SSI during hospitalization.²



Maintaining sterile technique is critical for preventing SSIs.¹ Sterile technique involves using specific principles and activities to maintain sterility and prevent contamination of the sterile field and sterile items during surgery and other invasive procedures.¹ Conscientious application of these principles and activities is key to preserving the integrity of the sterile field, minimizing the risk for SSIs, and ensuring the best outcomes for patients.

This study guide and the accompanying video provide guidance for perioperative RNs and other perioperative team members on principles and practices of sterile technique. Sterile technique includes such a wide range of topics that it is not possible to address all of them in detail within a single program. Some of the subjects in this guide (eg, surgical attire, hand hygiene) are covered more extensively in guidelines of their own. To keep this guide manageable, only the highlights of these topics will be presented. The reader will be referred to the appropriate guidelines for more comprehensive discussions of these topics.

BEFORE PREPARING THE STERILE FIELD

Perioperative settings are controlled environments designed to minimize risks for infection during surgery and other invasive procedures. Work practices adopted by perioperative

team members are essential components of the perioperative environment and are necessary for preventing contamination of the sterile field. These practices include performing hand hygiene, performing surgical hand antisepsis, and donning a sterile gown and gloves using sterile technique.¹



Wear clean surgical attire and a surgical head covering when entering any room where an invasive procedure is in progress (eg, operating room (OR), invasive procedure room). Clean surgical attire helps contain bacterial shedding, promotes environmental cleanliness, supports patient safety, and helps to preserve the integrity of the sterile field. Surgical attire should be worn by every team member entering the room, even if only briefly (eg, delivering supplies, picking up specimens).¹

Wear a clean surgical mask that covers your mouth and nose whenever open sterile supplies are present. Secure the mask in a manner that prevents venting at the sides.¹

For a more comprehensive discussion of surgical attire, the reader can refer to the AORN Guideline for Surgical Attire in the Guidelines for Perioperative Practice.

Hand Hygiene and Surgical Hand Antisepsis

Microorganisms on the hands of perioperative team members can be transmitted to patients and the environment, and this can lead to the development of health care–associated infections.⁴ Hand hygiene is widely recognized as an effective and cost-efficient method for infection prevention in the perioperative setting.⁴ It may be the single most important practice for reducing the transmission of infectious organisms.⁵

Hand hygiene can be defined as any activity related to hand cleansing and the condition of the hands.⁴ Using alcohol-based hand rubs and washing with soap and water are both suitable for hand hygiene.⁴ Using an alcohol-based rub according to the manufacturer's instructions for use is often preferred when hands are not visibly soiled.^{4,6} Alcohol-based products dry the

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skin less, are more effective against many bacteria, and have significantly better efficacy in removing some viruses.^{6,7}



Perform hand hygiene before putting on a surgical mask and opening sterile supplies.¹ Perform surgical hand antisepsis, either by performing a surgical hand scrub or using a surgical hand rub, before donning a sterile gown; gloves; and, when indicated, a surgical helmet system.⁴ Follow the manufacturer's instructions for use for any product used to perform surgical hand antisepsis, and adhere to a standardized protocol.⁴

Maintain short, natural fingernails. Fingernail tips should be no longer than 2 mm (0.08 inch). Avoid wearing jewelry on the hands or wrists in patient care areas. Microorganisms can be shielded underneath or within the crevices of jewelry.⁴

Always remember that wearing gloves does not eliminate the need for hand hygiene and surgical hand antisepsis. Gloves can fail and should only be considered a second line of defense.⁴

For a more comprehensive discussion of hand hygiene, the reader can refer to the AORN Guideline for Hand Hygiene in the Guidelines for Perioperative Practice.

Gowning and Gloving

After performing surgical hand antisepsis, use sterile technique to don a sterile gown and gloves. Sterile technique reduces the risk of wound contamination and SSIs that can result from direct contact of skin or clothing with the sterile field. Be sure to put on the gown and gloves in a sterile area away from the sterile field. Maintaining separation from the sterile field while putting on a gown and gloves can help minimize the risk of contaminating the field.¹

A gown of the appropriate size should wrap around the wearer's body and completely cover the wearer's back. The sleeves should conform to the shape of the wearer's arms and be long enough to allow the gloves to completely cover the gown cuffs. The cuffs should not become exposed when the arms are extended. A gown that is too small or that has sleeves



that are too short may restrict movement, increase the risk for unsterile skin or clothing to touch the sterile field, or fail to adequately protect the team member from exposure to blood and other fluids. A gown that is too large may brush against unsterile objects or surfaces.¹

The parts of the gown considered sterile are the front of the gown from the chest to the level of the sterile field and the gown sleeves from the cuff to 2 inches above the elbow. Parts of the gown considered unsterile include the neckline, shoulders, axillary region, back of the gown, and the cuffs of the sleeves after the scrubbed person's hands pass through and beyond the cuff.¹

When putting on gloves without assistance, be sure to touch only the inside of the gloves.¹

Gloves should completely cover the gown cuffs to protect the wearer from exposure to blood and other fluids and to minimize the risk for contamination of the sterile field. Gown cuffs are made of a knit material that is permeable and may allow transfer of microorganisms. Inspect gloves for integrity after you put them on, before coming into contact with the sterile field, throughout use, and whenever an outer glove is penetrated and outer gloves are changed.

STERILE FIELD

Prepare a sterile field for patients undergoing surgery or other invasive procedures. A sterile field is an important component of infection prevention and reduces the risk for microbial contamination. Remember to perform surgical hand antisepsis and put on sterile surgical attire before preparing the surgical field.¹

Prepare the sterile field as close as possible to the time of use to reduce the risk that particulate matter and potentially infectious materials will settle on the field. Evidence suggests that the risk for contamination of a sterile field increases over time.¹

Open a sterile field for only one patient at a time. Opening sterile fields or sterile supplies for multiple patients in a single

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room increases the risk for cross contamination and errors. The sterile field should be prepared in the room where it will be used and should not be moved. Moving the sterile field to a new location increases the risk for contamination.¹

Only the top surface of the field is considered sterile. Items located below the field or that fall below the level of the field are considered contaminated.¹

Allow only sterile items to come into contact with the sterile field. Using only sterile items for invasive procedures minimizes the risk for infection and maximizes the likelihood that the sterile field will remain free of microorganisms. Keep sterile fields and instruments separate for procedures that involve different wound classifications (eg, clean, clean-contaminated, contaminated, dirty). Separating sterile fields and instruments for surgical sites with differing wound classifications may lower the risk for contamination of the cleaner wound.¹

Sterile Drapes

Use sterile drapes to establish a sterile field. Sterile drapes provide a barrier that minimizes the passage of microorganisms from unsterile to sterile areas and reduces the risk for health care–associated infections.¹



Place sterile drapes on the patient, furniture, and equipment in the sterile field to prevent contamination of the field. Sterile drapes should be handled as little as possible and in a controlled manner. Rapid movements of draping materials create air currents that can cause dust, lint, and other particles to migrate. Do not move the portion of the sterile drape that establishes the sterile field after it is initially positioned.¹

TRANSFERRING STERILE ITEMS TO THE STERILE FIELD

Open, dispense, and transfer sterile items to the sterile field using methods that maintain the sterility and integrity of both the items and the sterile field.¹

Transfer items to the sterile field as close to the time of planned use as possible. Correctly wrapped and packaged sterile items have been shown to maintain sterility over time, but the risk for contamination increases after the items have been opened. Have items available and ready to open in the OR or procedure room, but do not open them until they are needed. Leaving implantable items and devices in their sterile packaging until needed reduces risks of contamination from airborne sources and handling. Opening items close to the time of use can also reduce waste and reduce the possibility of opening items that are not needed or used.¹



Inspect sterile items before transferring them to the sterile field. Assess the sterility of the contents as noted on the packaging and check the expiration date when applicable. Ensure the integrity of the packaging and the product. Verify that external chemical indicators have changed to the correct color to indicate that parameters for sterilization have been met. Inspecting items helps to ensure that conditions required for sterility have been met and maintained. Implantable items and devices may have additional elements that require inspection (eg, sizing).¹

Do not use an item with an expiration date after that date has passed.¹

Deliver items to the sterile field in a manner that prevents unscrubbed team members (eg, RN circulator, anesthesia professional) from having to lean or reach over the sterile field. Unscrubbed team members can shed bacteria and other microorganisms. Maintaining distance from the sterile field decreases the potential for contamination when items are transferred from unsterile to sterile areas. Present sterile items directly to scrubbed team members or place them securely on the sterile field. Items tossed onto a sterile field may roll off the edge, punch a hole in the sterile drape, or displace other items. Present heavy or sharp items directly to a scrubbed team member or open them onto a separate clean, dry surface.¹

Open items packaged in sterile barrier systems according to the manufacturer's instructions for use.¹

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Inspect rigid sterilization containers for intact external locks, secured latch filters, valves and tamper-evident devices, and for correct color change of external indicators before opening the containers onto a clean, flat, and dry surface.¹

Open rigid sterilization containers in the following sequence:

1. An unscrubbed person (eg, RN circulator) lifts the lid toward him or herself while moving the lid away from the container.
2. The unscrubbed person inspects the integrity of the lid filter or valve. The contents should be considered contaminated if the filter is dislodged, damp, or not intact (eg, holes, tears, punctures).
3. A scrubbed team member (eg, scrub RN, surgical technologist) lifts the inner basket(s) out of and above the container without contacting the unsterile surfaces of the table or container.
4. Before placing the instruments on the sterile field, the scrubbed person examines the internal indicator for the correct color change and inspects the inside surface of the container for debris, moisture, contamination, or damage.
5. If there are any filters in the bottom of the container, the unscrubbed person inspects them to ensure their integrity.¹

Opening rigid sterilization containers on a clean, flat, and dry surface facilitates removal of sterile contents while minimizing the risk for contamination. Lifting the lid up and away from the container and toward oneself helps to prevent potential contamination from contact between the unsterile lid and the sterile contents and inside of the container. Lifting the lid up and away also helps to prevent the unscrubbed person from leaning over the container. Inspecting the integrity of locks, valves, and filters helps to ensure that sterile conditions inside the container have been maintained.¹

If it is determined during the sequence of opening the rigid sterilization container that the integrity of any of the items is

compromised or contaminated, the items should be immediately removed from the sterile field.¹

Inspect wrapped sterile packages for intact tape and correct indicator color changes before opening. An unscrubbed person should open a wrapped sterile package in the following sequence:

1. Open the farthest wrapper flap and secure it in the hand holding the item.
2. Open each side flap, one at a time, and secure them in the hand holding the item.
3. Open the nearest flap and present the item to the scrubbed team member.
4. Visually inspect the entire wrapper for integrity (eg, no holes, tears, punctures) and presence of moisture before the sterile item is placed onto the sterile field.¹



Opening the farthest wrapper flap first prevents contamination that might result from passing an unsterile arm over sterile items. Wrapper edges are considered contaminated. Securing the edges helps to prevent loose edges from contaminating sterile areas or items. Holes, tears, punctures, or other damage to the wrappers indicate a loss of wrapper integrity, and the package should be considered contaminated.¹

Inspect paper-plastic pouches (ie, peel pouches) for intact seals and for the correct color change of external indicators. Present the pouch to the scrubbed person or open it onto the sterile field by pulling back the flaps without touching the inside of the package, allowing the contents to slide over the unsterile edges of the package, or tearing the package. Touching the inside of the package or allowing the contents to slide over the unsterile edge may contaminate the contents.¹

Transfer medications and sterile solutions to the sterile field in a slow, controlled manner as close to the time of use as possible. Use sterile transfer devices (eg, sterile vial spike, filter straw, plastic catheter) unless the medications or solutions are packaged for sterile delivery to the field. Transfer

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the medication or solution into a receptacle placed near the sterile table's edge or held by a scrubbed person. Verify the medication or solution and label it immediately after transfer. Do not remove medication vial stoppers unless they are specifically designed by the manufacturer for removal and pouring. Medications and sterile solutions should only be poured from the container once, and the container should not be recapped. The sterility of the contents of an opened container cannot be maintained if the cap is replaced. Discard any remaining fluids in the opened container at the end of the procedure.¹

MAINTENANCE OF THE STERILE FIELD

The sterile field may be contaminated by personnel, breaks in sterile technique, vectors (eg, insects), and exposure to air. The perioperative team should continually maintain the sterile field.¹

Monitor the sterile field continually for breaks in sterile technique. If breaks are observed, take corrective action immediately unless doing so would put the patient at risk. If patient safety concerns prevent immediate corrective action, then action should be taken as soon as it is safe to do so. Contamination may become increasingly difficult or complex to contain the longer corrective action is delayed.¹

Instruments

Instruments should be considered contaminated if they are found assembled or clamped closed, with organic material (eg, blood, tissue, hair, bone fragments) in or on the instrument, or with other debris (eg, bone cement, grease, mineral deposits) in or on the instrument. Sterilization and high-level disinfection require all surfaces of an instrument to contact the sterilizing or disinfecting agent under specified conditions for a specified length of time. Proper contact with sterilizing or disinfecting agents cannot be ensured if instruments have not been properly disassembled, are clamped closed, or have organic material or other debris on them. Such instruments cannot be considered sterile.¹



A single contaminated item calls the sterility of the entire set into question. If any contaminated instruments are found in a set, then the entire set should be considered contaminated. When team members find a contaminated item, corrective action should include removing the item, removing any other items that may have come into contact with the contaminated item, and changing the gloves of any team member who may have touched any contaminated or potentially contaminated item.¹

Event-related sterility refers to maintenance of sterility that is not based on expiration dating. Instead, it is based on factors such as the quality of packaging materials, storage conditions, methods and conditions of transport, amount and conditions of handling, and environmental conditions.¹

For a more comprehensive discussion of sterilization and high-level disinfection, the reader can refer to the AORN Guideline for High-Level Disinfection and the AORN Guideline for Sterilization in the *Guidelines for Perioperative Practice*.

Covering the Sterile Field



Cover a sterile field if it will not be used immediately (eg, delayed surgery, separate sterile field for closure, multiple back tables). Prolonged exposure to air may affect the sterility

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of the field and the instruments placed on it. Covering the field can reduce the risk for contamination. Covering the sterile field should be considered a secondary strategy for minimizing the potential for contamination. Opening the sterile field as close to the time of use as possible should be the primary strategy.¹

Cover the field with a sterile drape in such a way that sterility will not be compromised when the cover is removed. One suggested technique is the two-“cuffed”-drape method. For this technique, place the first drape horizontally over the table with the cuff at or just beyond the halfway point. Place the second drape on the opposite side of the table and position the cuff to completely cover the cuff of the first drape. To remove the drapes, the RN places his or her hands within the cuff of the top drape and lifts it up and away from the table toward him or herself. The RN then removes the second drape from the opposite side of the table in the same way.¹

Covering a Sterile Table



Illustration by Colleen Ladny and Kurt Jones

Portions of a sterile field may also be covered when the sterile field is in use. This may be especially important for patients who are at high risk for SSI and have long procedures that use multiple instruments (eg, orthopedic, transplant, or cardiovascular procedures).¹

An interdisciplinary team that includes an infection preventionist should develop and implement measures to minimize the risk for contamination of covered sterile fields (eg, posted sign, limited traffic, direct observation).¹

Unidirectional Ultraclean Air Delivery System

When a unidirectional ultraclean air delivery system (eg, laminar airflow) is in use, the patient’s surgical site and the sterile instrument table should be positioned within the air curtain of the system, if possible. A unidirectional ultraclean air delivery system provides a steady stream of high-efficiency particulate air filtration within the air curtain. Keeping sterile areas and scrubbed team members within the air curtain may reduce the number of airborne bacteria and particles in that area. The impact area of the system may be visually identified on the OR floor.¹

If a horizontal unidirectional air delivery system is in use, the scrubbed perioperative RN should not be positioned between the horizontal airflow source and the surgical incision site. The RN should not leave the sterile field to get items from the sterilizer. Unscrubbed team members should stay outside the air curtain and should not stand or walk between the air curtain and the sterile field.¹

Heater-cooler devices used in an OR with a unidirectional ultraclean air delivery system should be positioned outside the air curtain, away from the sterile field, and with exhaust directed away from the sterile field to help decrease ventilation disruptions and turbulent airflow.¹

Intraoperative Debridement Devices

Implement interventions to minimize exposure of team members to potentially infectious materials and to reduce contamination of the sterile field when intraoperative debridement devices (eg, hydrosurgery, pulse lavage, low-frequency ultrasonic debridement) are in use with open, infected wounds. Interventions can include wearing personal protective equipment, wearing a surgical helmet system, training team members on the correct use of the device, covering the active hand piece with a clear sterile drape, and following the manufacturer’s recommendations for power, irrigation, and suction settings to limit mist, spatter, or spray to the extent that patient care allows.¹

Movement and Positioning Around the Sterile Field

Perioperative team members should move within and around the sterile field in such a way as to minimize the risk for contamination. Scrubbed and unscrubbed team members each have a set of precautions that they should observe.¹

Scrubbed team members should stay close to the sterile field and only touch sterile areas or items, keeping their hands and arms above waist level at all times. Contamination can occur if the arms drop below waist level. Team members should avoid folding their arms with their hands in the axillary area

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because perspiration in the axillary area could potentially lead to contamination of the gloves.¹



Scrubbed team members should not change levels during surgery because changing levels could potentially bring unsterile portions of the gown into contact with sterile areas. Team members should sit down only if the entire procedure will be performed seated.¹

Scrubbed team members should not turn their backs to the sterile field because the back of the gown is considered unsterile. When changing position, scrubbed team members should remain face to face or back to back to avoid contaminating each other. Team members should maintain adequate distance between each other, between themselves and the sterile field, and between themselves and nonsterile areas during position changes.¹

Unscrubbed team members should face the sterile field when they approach it and should avoid walking between sterile fields or between scrubbed team members. Facing the sterile field allows team members to observe how close they are to the field and to monitor for potential contamination. Walking between sterile fields or scrubbed team members may increase the risk for contamination because of the difficulty of monitoring both sides of a person at the same time. Unscrubbed team members should not reach over an uncovered sterile field and should stay as far from sterile fields and scrubbed personnel as possible. Reaching over a sterile field increases the risk for contamination.¹

Team members should monitor each other for potential breaks in sterile technique and take corrective action as soon as patient safety allows, immediately if possible.¹

Keep doors to the OR or procedure room closed as much as possible, except during entry and exit of patients, required team members, and necessary equipment. Door openings may increase OR environmental contamination which may, in turn, increase the risk for SSI.¹



An interdisciplinary team of key stakeholders should develop and implement interventions to decrease the number of door openings. Interventions may include:

- preplanning and consolidating supply and equipment retrieval,
- keeping surgeons' preference cards current,
- confirming that all instruments and supplies are present before the incision is made,
- posting a sign on the door to restrict traffic while a procedure is in progress,
- using means of communication that do not involve opening the door during procedures, and
- assessing the phase of the procedure before relieving for breaks.¹

Isolation Techniques

Use isolation techniques for bowel surgery and procedures involving resection of metastatic tumors. Isolation techniques are intended to prevent the transfer of infectious microorganisms or cancer cells from one area to another. Practicing these techniques can reduce the risk of SSI or seeding cancerous cells to new areas.¹

Health care organizations should develop and implement standardized procedures for isolation techniques. Standardized procedures facilitate efficiency, promote continuity, and help team members achieve accuracy. Studies show human errors often involve deviations from routine practices. Developing standardized practices allows the health care organization to determine practices that best meet the needs of the patient population.¹

Isolation technique procedures should include

- organizing the sterile field in a way that minimizes risk of exposure of the field to intestinal bacteria or cancerous cells,
- initiating isolation technique immediately before resection of the bowel or tumor,

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- maintaining isolation technique until the anastomosis or resection is complete,
- discontinuing use of instruments that have contacted the inside of the bowel or were used for tumor excision,
- removing contaminated instruments and items from the sterile field or placing them in a separate area that will not be touched by sterile team members,
- changing surgical gloves and gowns when soiled,
- covering existing sterile drapes with new sterile drapes after the resection, and
- using clean instruments to close the wound after anastomosis or resection.¹

Either a single or dual field technique can be used for isolation.¹

Use wound protectors for procedures that involve entering the gastrointestinal or biliary tracts. Wound protectors may reduce the risk for contamination, and this may, in turn, decrease the risk for SSI. Always follow the manufacturer’s instructions for use when using wound protectors.¹

SUMMARY

Prevention of SSIs is an important concern for all perioperative team members. Diligently applying the principles of sterile technique will help to maintain the integrity of the sterile field during operative and invasive procedures, minimize the risk for SSIs, and optimize patient outcomes.

Table 2. Isolation Technique for Single and Dual Sterile Fields	
Single Sterile Field	Dual Sterile Fields
Prepare 1 sterile field for the procedure and closure.	Prepare 1 sterile field for the procedure. Prepare and cover a 2nd sterile field for the closure.
Before transection of the bowel or metastatic tumor excision, place a wound protector or clean sterile towels around the surgical site.	
Segregate all contaminated instruments and other items that have contacted the bowel lumen or metastatic tumor to a designated area (eg, Mayo stand, basin).	Not applicable
Refrain from touching the sterile back table while the bowel is open or metastatic tumor excision is in progress.	Not applicable
When the anastomosis/resection is complete, remove the contaminated instruments, wound protector, towel drapes, and any other potentially contaminated items (eg, electro-surgical pencil, suction, light handles) from the surgical site and place them in a separate area of the sterile field that will not be touched during closing.	When the anastomosis/resection is complete, remove the contaminated instruments, wound protector, towel drapes, and any other potentially contaminated items (eg, electro-surgical pencil, suction, light handles) from the surgical site and place them on the sterile field used during the procedure that will not be touched during closing.
Irrigate the wound and initiate accounting procedures.	
Announce the change to clean closure.	
Have one scrubbed team member remain at the sterile field while all other team members change gloves. Gowns may also be changed. The scrubbed team member who remained at the sterile field should remove the moist counted sponges or towels, then change gloves when the other team members are back at the sterile field.	
Apply sterile light handles.	
Apply sterile drapes to cover the existing drapes, which may be soiled with bowel contents or may have been in contact with the metastatic tumor tissue.	
Secure a sterile electro-surgical pencil and suction to the field.	
Proceed with wound closure using only sterile instrumentation and items.	Proceed with wound closure using only sterile instrumentation and items from the sterile field for the closure.

Table 2. Isolation Technique for Single and Dual Sterile Fields. Guideline for Sterile Technique. AORN, Inc. 2019. Reprinted with permission.

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POST-TEST

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Multiple choice. Please choose the word or phrase that best completes the following statements.

1. When should perioperative team members wear surgical attire and a surgical head covering?
 - a. Any time they enter an operating room for any reason
 - b. Only when they are directly involved with patient care
 - c. Only when they are part of the scrubbed team
 - d. Only when they are transferring sterile items to the sterile field
 - e. Only when they will remain in an operating room for more than 1 minute
2. Which of the following is the most important practice for minimizing the risk for infectious organism transmission?
 - a. Keeping doors to the operating room closed
 - b. Observing isolation precautions
 - c. Performing hand hygiene and surgical hand antisepsis
 - d. Properly preparing the sterile field
 - e. Wearing a gown and gloves
3. Which of the following parts of a surgical gown are considered sterile?
 - a. The back
 - b. The neckline
 - c. The shoulders
 - d. The sleeves from the cuff to 2 inches above the elbow
 - e. All of the above
4. Which of the following statements about preparation of sterile fields is most accurate?
 - a. Sterile fields for all procedures planned for the day should be prepared in the morning before patients arrive.
 - b. Sterile fields should be prepared in a dedicated sterile room and transported to the operating rooms for use.
 - c. Perioperative team members should perform surgical hand antisepsis before preparing a surgical sterile field.
 - d. Sterile fields for multiple patients can be prepared at the same time to improve efficiency.
5. Which of the following areas of a properly draped sterile field is considered sterile?
 - a. The bottom
 - b. The sides
 - c. The top
 - d. Any area above the tallest scrubbed team member's waistline
 - e. All of the above
6. Which of the following isolation technique procedures should be followed to prevent the spread of cancer cells from one area to another during resection of metastatic tumors?
 - a. Changing surgical gloves when soiled
 - b. Covering existing sterile drapes with new sterile drapes after the resection
 - c. Discontinuing use of instruments after they were used for the tumor excision
 - d. Organizing the sterile field in a way that minimizes risk of exposure to cancerous cells
 - e. All of the above

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7. Which of the following practices should be followed when transferring sterile items to the sterile field?
- An unscrubbed team member should stand as close as possible to the sterile field when transferring items.
 - Only a scrubbed team member may transfer sterile items to the sterile field.
 - Open and transfer all sterile items needed for the procedure to the sterile field before the patient enters the room.
 - Present heavy or sharp sterile items directly to a scrubbed team member receiving the items onto the sterile field.
 - Toss sterile items onto the sterile field from a distance whenever possible.
8. What is the best practice to follow if a contaminated item is discovered in a set of sterilized instruments?
- Consider all opened instruments in the room to be contaminated.
 - Consider only the involved item to be contaminated.
 - Consider the entire set to be contaminated.
 - Consider the involved item and any other item within 4 inches of the involved item to be contaminated.
9. Which of the following statements regarding the use of a unidirectional ultraclean air delivery system is most accurate?
- Heater-cooler devices should be positioned inside the air curtain.
 - Scrubbed team members should stand outside the air curtain.
 - The sterile instrument table should be positioned inside the air curtain.
 - The surgical site should be positioned outside the air curtain.
 - Unscrubbed team members should remain inside the air curtain as much as possible.
10. Which of the following practices should scrubbed team members follow to maintain the integrity of the sterile field?
- Avoid folding the arms with hands in the axillary area.
 - Keep hands and arms above the waist level at all times.
 - Maintain distance between themselves and other scrubbed team members when changing position.
 - Remain face to face or back to back with other scrubbed team members when changing position.
 - All of the above



STERILE TECHNIQUE: AN INTRODUCTION

POST-TEST ANSWERS
STERILE TECHNIQUE: AN INTRODUCTION

10. e

9. c

8. c

7. d

6. e

5. c

4. c

3. d

2. c

1. a

