


<b>Infection Control Manual</b>		
	Policy Name	<b>Infection Control Guidelines for Perioperative Services</b>
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**I. Description**

Describes the infection control policies and procedures to reduce the risk of a healthcare-associated infection in the perioperative environment at UNC Health Care, Ambulatory Surgical Center and Hillsborough Hospital

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**II. Rationale**

Infection is a well recognized risk of surgical and invasive procedures. Strict adherence to the evidence-based recommendations in this policy can reduce the risk of infection for the surgical patient.

**III. Policy**

**A. General Information**

1. Education

- a. Infection Control education via LMS including OSHA Bloodborne Pathogen and TB Training is required initially upon employment and annually thereafter. An Infection Preventionist (IP) may be consulted regarding continuing education needs of Perioperative Services staff.
- b. There will be periodic review by Hospital Epidemiology and annual competencies by Perioperative Services to assess compliance with established infection control policies and procedure.

2. Environment/Cleaning

## Infection Control Guidelines for Perioperative Services

- a. Pre-Op and PACU should be cleaned according to the Infection Control IC 0020: Environmental Services Policy
  - b. Routine daily cleaning of floors with an EPA-registered germicide is required as specified in the Infection Control IC 0020: Environmental Services Policy.
  - c. Cubicle curtains are changed every 6 months and when visibly soiled by Environmental Services.
  - d. All permanent equipment in patient bed spaces (e.g.; bedside tables, monitors) should be cleaned daily with an EPA-registered disinfectant detergent (e.g., Sani-Cloths, MetriGuard). Equipment positioned close to the patient or used between patients should be cleaned after each patient.
  - e. After each patient transport on a surgical stretcher, linens are changed and surfaces are wiped with an EPA-registered disinfectant detergent. The entire stretcher will be cleaned with an EPA-registered disinfectant detergent when obviously soiled and at the end of the day.
  - f. In the Operating Rooms, the environment will be maintained by daily, intraoperative, interim and weekly terminal cleaning routine. (Refer to the Standard OR Sanitation, Appendix 3).
  - g. All blood spills should be cleaned up immediately and the spill area decontaminated with an EPA-registered tuberculocidal disinfectant detergent or a 1:10 solution of bleach and water. If the spill is large, flood the spill area with the disinfectant prior to cleaning up. Take care to avoid sharp injuries during clean up.
3. Hand Hygiene
- a. Personnel must adhere to the Infection Control IC 0024: Hand Hygiene and Use of antiseptics for Skin Preparation Policy. Hand hygiene should be performed with an approved antimicrobial handwashing agent or waterless antiseptic hand-rub before and after each patient contact.
  - b. In ORs hand hygiene is monitored prior to donning gloves and after removal of gloves. This is monitored by Perioperative Services Staff.
  - c. In Pre-Op and PACU hand hygiene is monitored prior to entering patient care area and upon exiting the area.
  - d. Operating Room Personnel must adhere to the Surgical Hand Antisepsis Guidelines. (Refer to Appendix 5).
  - e. Artificial nail applications are not permitted in staff providing direct patient care. Nails should be kept clean, well manicured, and of a reasonable length (e.g., ¼ inch from the tip of the finger). Nail polish must be well maintained and not chipped.
  - f. Personnel with dermatitis or open cuts/lesions on the hands or face must be evaluated in OHS before reporting to work.
4. Laboratory Specimens
- a. Lab specimens including those from the operating rooms are placed in appropriate leak-proof containers taking care not to contaminate the outside of the container. Specimens sent via the tube system or for pick-up by laboratory personel/robot are placed in a plastic ziplock bag with a biohazard label. Specimens transported by OR staff to the lab (e.g. pathology) must be in a secondary container (e.g. ziplock bag, bath basin, cooler) displaying a biohazard label.

### 2. Personnel

- a. Personnel should adhere to guidelines established by the Occupational Health Service (OHS). Refer to Infection Control IC 0040: Infection Control and Screening Program: Occupational Health Service.
- b. Eating, drinking, applying lip balm and handling contact lenses are prohibited in areas where there is potential for contamination with blood or other potentially infectious materials. This includes the Semi-restricted and Restricted areas.
- c. Personnel will wear scrub clothing provided by the hospital. Clean scrubs are available in the scrub dispensers provided by Perioperative Services and will be laundered by the hospital. Scrubs will be changed daily and when soiled.
- d. Hair should be covered so it does not come into contact with patients or equipment.
- e. Surgical personnel who are colonized with organisms such as *S. aureus* (nose, hands, or other body site) or group A Streptococcus are not routinely excluded from duty unless such personnel have been linked epidemiologically to dissemination of the organism in the healthcare setting.

### 3. Precautions / Communicable Diseases

#### a. Standard Precautions

- i. Personnel must wear personal protective equipment (e.g., protective eyewear, mask, gloves, fluid-resistant gown) as needed when splash or splatter of blood or other potentially infectious material is likely.
- ii. Personnel should wear gloves when touching contaminated items. Employees with latex allergy should be evaluated by OHS. Gloves are to be removed after use and hand hygiene performed before touching clean items and prior to leaving the ORs or patient bed spaces.
- iii. Personnel must adhere to the Infection Control IC 0021: Exposure Control Plan for Bloodborne Pathogens. All needlestick/sharps, mucous membrane, and non-intact skin exposures from blood and other potentially infectious materials should be reported. UNC Health Care employees should call the Needlestick Hotline at 984-974-4480. This service is available 24 hours a day. University employees should call University Employee Occupational Health Clinic at 984-974-9119. After hours and on weekends, the caller will be given a contact number.
- iv. The provision of safety devices will be implemented in accordance with the Infection Control IC 0021: Exposure Control Plan for Bloodborne Pathogens.
- v. Double-gloving has been shown to reduce blood exposures during operative procedures and therefore is suggested for all scrubbed personnel performing high-risk procedures or surgeries.
- vi. Blunted suture needles ideally should be used in selected surgical procedures, as appropriate to prevent needle stick injuries.
- vii. Sharp instruments should not be passed from hand to hand unless the specific surgical operation requires continuous focus. It is the responsibility of the surgeon and scrub tech(s) to safely pass instruments. Sharp instruments should either be passed using a neutral zone or in a suitable container to decrease the possibility of injury.

#### b. Isolation Precautions / Communicable Diseases

- i. Elective inpatient admissions should be deferred if possible when patients have a communicable infectious disease.
  - ii. Patients on isolation precautions will be managed as per Appendix 9 while in the ORs, Pre-Op and PACU. Personnel should refer to the Infection Control IC 0031: Isolation Precautions Policy and the Infection Control IC 0060: Tuberculosis Control Plan for further information.
  - iii. Patients requiring an airborne isolation room shall not be scheduled in ASC.
4. Reuse of Single Use Devices

Single use devices may not be reused except those remanufactured by an FDA-registered third party reprocessing company. Refer to the Infection Control IC 0058; Reuse of Single Use Devices Policy.
5. All allograft human tissues should be stored and handled according to the Perioperative Services Policy PERIOP 0014: Allograft and Autograft Tissue Storage and Handling. Aseptic technique will be maintained when tissues are placed on the sterile field.
6. Visitation / OR Observers
  - a. Pre-Op and PACU
    - i. Visitors with communicable diseases should not accompany patients to the Pre-Op waiting rooms, nor be admitted to ASC/HBH as the patient's "responsible adult."
    - ii. Visitation by pediatric patients is allowed when the charge nurse and the primary care nurse deem conditions are appropriate. Visitors under the age of 12 will be screened during each visit for contagious illnesses. Refer to the "Hospital Visitation policy"
    - iii. The visitation policies will be monitored and implemented by the nursing staff.
    - iv. Visitors should perform hand hygiene before approaching the bedside and upon leaving the patient care area.
  - b. Operating Room
    - i. Observers with purposeful visits, including product consultants, professors, unit nurses, student nurses, and allied health students will be permitted to visit the surgical suite on an individual basis for a limited time. Vendors will follow the Perioperative Services "Visitor Policy" and the Administrative policies "Vendor Representative Policy and Visitation Guidelines" and "Vendor Relations."
    - ii. The attending surgeon, Patient Service Manager, or educator of the department will authorize observers. The purpose of the visit must be stated and approved.
    - iii. Observers are required to inform the Patient Service Manager in the OR and schedule coordinator of their presence and to sign the OR guest log located at the main desk of each OR. Observers are required to wear an identification tag at all times with name and title displayed.
    - iv. The Patient Service Manager will inform the circulator of the purpose and name(s) of visitors upon their arrival.
    - v. Observers will comply with the Perioperative Services Infection Control policy while in the surgical suite. Observers will receive an orientation to pertinent protocols, as necessary. (Refer to Appendix 4, Observers Protocol.)
    - vi. Corrections officers will comply with the Prisoners/Forensic Patients Policy while in the surgical suite.

### c. OR Visitation By Parents

- i. With anesthesiologist approval, one parent of a pediatric patient will be allowed to accompany their child to the Operating Room and Pre-Op areas.
- ii. In the Operating Room, the parent must wear a cover (e.g., bunny suit) over their clothes, hair cover, and surgical mask.
- iii. The parent will be accompanied into the Operating Room by the anesthesia team and will be directed out of the Operating Room by a nursing staff member to wait in an appropriate area (e.g., ICU waiting room, patient room, or PCS waiting room).
- iv. The parent will leave the child after induction is complete and prior to intubation and line insertion or any time deemed appropriate by the attending anesthesiologist.
- v. Children older than one year of age to pre-teens will be considered appropriate candidates for parent accompaniment to OR. Although other aged children may be considered for special circumstances.

## 7. Waste Disposal

- a. Perioperative Services personnel will comply with the Infection Control Policy: "Guidelines for the Disposal of Regulated Medical Waste."
- b. The majority of solid waste from Perioperative Services is considered non-regulated medical waste and will be placed in a regular white biohazard plastic trash bag and discarded with the general hospital waste.
- c. Blood, irrigating solution, and other potentially infectious material > 20 ml per unit vessel may be discarded by pouring contents into the clinical sink or hopper and discarding the resealed container in a regular trash bag, or by means of manufactured fluid disposal system (e.g., SAF-T Pump, Neptune system). Alternatively, the suction canister may be securely capped and discarded upright in a red trash bag-lined biohazard box.
- d. All empty blood product containers (bags and bottles), as well as administration tubing, will be placed in a regular trash bag.
- e. Surgical needles and small sharps are collected in needle counter containers and placed in a sharps disposal container. Surgical sharps that are too large for the needle counter container should be placed directly into the sharps disposal container.
- f. Non-surgical needles and syringes with needle attached are deposited in the sharps disposal container located in each OR. Do not recap needles. Sharps disposal containers should be tightly sealed and emptied when  $\frac{3}{4}$  full.
- g. Transfer carts used for transporting waste outside the Operating Room should be cleaned with a disinfectant detergent prior to returning them to the surgical suite.

## B. Preoperative Care / Patient Preparation

### 1. General Guidelines

- a. Encourage tobacco cessation. At minimum, instruct patients to abstain for at least 30 days before elective operation from smoking cigarettes, cigars, pipes, or any other tobacco product.
- b. Whenever possible, identify and treat all infections remote to the surgical site before elective operations and postpone elective operations on patients with remote site infections until the infection has resolved.
- c. During the perioperative phase, control serum blood glucose levels in all diabetic patients.

- d. Before elective colorectal operations when indicated the agreed upon preoperative mechanical and oral antimicrobial bowel prep should be ordered and patient educated on the procedure.
- e. An OR disposable cap will be applied to contain the patient's hair and to prevent temperature loss while in surgery.
- f. For inpatients, a Prediagnostic/Operative Checklist will be completed on the electronic medical record by unit nurses. The Pre-Op nurse will review and verify that the checklist has been completed upon arrival Pre-Op. For outpatients, a Pre-admission Assessment is completed.

### 2. Preoperative Antiseptic Shower / Bath

- a. Patients should be instructed to shower or bathe with an antiseptic agent (e.g., chlorhexidine gluconate 4%) on the night before and day of surgery. Patients scheduled for surgery on the face, head, eyes, ears, nose, and mouth are candidates for a preoperative shower or bath with CHG but must be informed they should not use the CHG on mucous membranes of the eyes or ears. Patients should be encouraged to read the instructions and warnings on the CHG product label. If the patient is unable to read, the instruction should be reviewed with the patient/caregiver.
- b. Upon admission to Pre-Op, staff should verify with the patient and document that the pre-operative shower/bath has been performed.

### 3. Hair Removal

- a. Hair should not be removed from the operative site unless it may interfere with the surgical procedure. If hair removal is necessary, remove immediately before the operation with electric clippers. When hair removal is necessary, clipping should be performed outside of the OR in the preoperative unit except in cases to protect the privacy of the patient. The use of razors is prohibited except for scrotal surgery when use of clippers are found to cause excessive damage to the skin; only a single use disposable razor may be used.
- b. Pre-operative clipping ideally should be performed outside the OR (e.g. in the patient's room or Pre-Op). A new disposable clipper head is used for each patient. The clipper handle should be cleaned between patients. Children and occasionally adults may require hair removal in the OR. (e.g., a child may be uncooperative with hair removal until after sedation has been administered).

### 4. Prophylactic Antibiotic Administration

For the "Protocol for Administration of Prophylactic Antibiotics to Prevent Surgical Site Infections," refer to the [Anesthesiology Infection Control Policy](#).

### 5. Marking of the Surgical Site

- a. Non-sterile permanent markers containing alcohol (e.g., Sharpie) are used to mark the surgical site prior to the procedure and before skin preparation. Discard if used on a patient on Contact Precautions or if visibly contaminated.

## C. Intraoperative Care (Operating Room)

### 1. Environment

- a. **Ventilation:** Recirculated filtered air with exchange rates of 15 (range 13-16) air changes/hour will be maintained and monitored at least annually by Plant Engineering. All air is introduced at the ceiling and exhausted near the floor. Static, positive air pressure within each operating room will be monitored by Plant Engineering. To keep

- pressure constant, doors to operating rooms are to remain closed except as needed for passage of equipment, personnel, and the patient. Air-conditioning system is not to be turned off and on while surgery is in progress. Deviations in these exchange rates or pressure differentials will be reported to Infection Prevention by Plant Engineering and/or OR staff. Infection Prevention will offer recommendations based on the clinical scenario (e.g., add portable HEPA units to the OR)
- b. Temperature and humidity should be maintained suitable for the care, treatment and services provided. Variation within normal comfort to staff and patients poses no infection risk and requires no infection control follow-up. From an infection control perspective, air changes and pressure differentials need a monitoring frequency but temperature and relative humidity monitoring is not necessary so long as temperature and relative humidity are not excessive (temperature >90°F, relative humidity >80% for longer than 48 hours).
  - c. **Vents:** Output and intake vent grills are to be inspected daily and kept free of dust by Environmental Services personnel in the Main Hospital and Women's and Children's Hospital, and by the Maintenance Staff at the ASC and HBH. Routine change of filters is performed by Plant Engineering. Condition of filters is computer monitored in Plant Engineering or UFS for the ASC.
2. Dress Code / Zones

Personnel will adhere to OR Dress Standards and Entering/Exiting Semi-Restricted and Restricted Zoned Policy (refer to Appendix 1).

Perioperative Services is divided into 3 zones to orient personnel to aseptic protocols.

- a. **Unrestricted Zone:** Defined as Pre-Op, PACU, administrative offices, lounges, and classrooms. Street clothes are permitted.
- b. **Semi-Restricted Zone:** Defined as the main surgical suites which include Main, W/C operating rooms, ASC operating rooms, HBH operating rooms, utility rooms, scrub rooms, labs, instrument processing rooms, sterile supply rooms/sterile core, and connecting corridors. Signs will be posted at all entrances, stating dress requirements. Street clothes and uniforms from other departments are not permitted. Personnel entering the Semi-Restricted Zone must dress in hospital laundered scrubs provided by the department. Hair must be contained in a disposable cap or hood. Personally-owned cloth caps are permitted. Personal head coverings must not be worn for more than one day without laundering. Shoe covers are worn when there it is anticipated splashes or splatters of blood or other potentially infectious materials may soil shoes. (Refer to Appendix 1). Disposable jumpsuits are provided for certain visitors (i.e., photographers, police guards, a parent invited to accompany a child to an operating room, or others with short, purposeful visits). Outpatients undergoing eye surgery are permitted to wear street clothes from the waist down that are covered with a hospital gown.
- c. **Restricted Zone:** Defined as each operating room within the Semi-Restricted Zone, where surgery is performed including OR 17. Limit the number of personnel entering the procedure room to necessary personnel. Personal items such as backpacks should not enter the operating room. In addition to OR attire, a mask that fully covers the mouth and nose and is secured in a manner that prevents venting will be applied before entering an operating room is worn if an operation is about to begin or is already underway, or if sterile instruments are exposed. Hair on the head and face (i.e., beards) must be fully covered to prevent shedding of hair and squamous cells. Large sideburns and ponytails must be covered or contained. Disposable bouffant and hood style covers will be provided. Bald and shaved heads must be covered to prevent shedding of

squamous cells. Personally-owned cloth caps are permitted. Personal head coverings must not be worn for more than one day without laundering. Personal head coverings soiled with blood or OPIM must be discarded and must not be taken home for laundering. If scrubbed, eye protection is provided and must be worn as specified in the policy: "Exposure Control Plan for Bloodborne Pathogens." Impervious sterile gowns are provided, as well as impervious boots, if needed.

- d. Exiting: When leaving Perioperative Service areas for public areas, personnel will change scrubs if soiled. **Mask, hat, and shoe covers will be removed upon leaving the department.** If returning to the Semi-Restricted Zone, OR scrubs ideally should be changed. Signs will be posted at exits stating dress requirements.

### 3. Patient Care in Operating Room

- a. Patient care within the Restricted Zone will be performed using strict surgical aseptic practices and confining patient contamination to the center of an OR where surgery is performed. Extreme care will be taken to prevent spread of patient contamination to the periphery and outside of the room.
- b. Personnel moving within or around the sterile field should do so in a manner that prevents contamination of the sterile field.
- c. Sterile ink (e.g., sterile marker) is used to mark skin or tissue on the sterile field.
- d. Prior to the surgical skin prep, the incision site should be thoroughly cleaned to remove any gross contamination. .
- e. A surgical skin prep of the operative site will be performed in the assigned operating room before surgery using standard aseptic technique and manufacturer's instructions for use. Chlorhexidine gluconate with alcohol (e.g., ChloraPrep) is the antiseptic that should be used unless there is a medical contraindication in which case iodophors with alcohol may be used. The only contraindication to betadine (iodophors) is reaction to previous use of topical iodine preparation or ingested iodine.

Chlorhexidine-alcohol (e.g., ChloraPrep) has been demonstrated to be the most effective agent to use for skin antiseptics prior to surgery. The preoperative antiseptic skin preparation should be applied per manufacturer's recommendations. The prepped area must be large enough to extend the incision or create new incisions or drain site, if necessary.

Chlorhexidine-alcohol (e.g. ChloraPrep) may be used on infants and neonates. Following manufacturer's instructions for use with caution in infants weighing < 1000 grams.

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**Note:** For neurosurgery and spinal surgery involving the meninges, Chlorhexidine-alcohol (e.g., ChloraPrep) may be used with strict adherence to the manufacturer's application and drying guidelines. Care should be taken to avoid direct contact with the meninges as per manufacturer's recommendations. Chlorhexidine-alcohol (e.g., ChloraPrep) has been demonstrated to be the most effective agent for skin antiseptics prior to surgery and a thorough review of the literature has not revealed any reported complications that can be attributed to the use of Chlorhexidine-alcohol (e.g. ChloraPrep) in such procedures. The benefits of reducing surgical site infection outweigh the theoretical risk of contact with the meninges. The surgeons will take care that this agent, which is applied to the skin and allowed to dry, does not have contact in its wet form with the central nervous system or meninges.

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- f. Draping of the operative site with sterile, disposable, nonwoven drapes will be performed using sterile technique (refer to Appendix 7).



- g. When indicated, use impervious plastic wound protectors for gastrointestinal surgery.
  - h. During the surgery, tissues should be handled gently, effective hemostasis maintained, and devitalized tissue and foreign bodies (e.g., sutures, charred tissues, necrotic debris) minimized. Dead space at the surgical site should be eradicated. Use delayed primary skin closure or leave an incision open to heal by second intention if the surgeon considers the surgical site to be heavily contaminated (e.g., Class III and Class IV).
  - i. If drainage is necessary, use a closed suction drain. Place a drain through a separate incision distant from the operative incision. Remove the drain as soon as possible. Negative pressure wound systems (e.g., VAC) should be used and managed according to manufacturer's recommendations.
4. Sterile Field Preparation
- a. All surgical procedure setups will be prepared by personnel trained in aseptic principles and techniques.
  - b. All sterile packages will be assessed for sterility before opening and dispensing to the sterile field. If an item in a sterile package or tray is noted to be visibly soiled the entire tray should be removed from the sterile field and a new tray obtained. Sterile equipment and solutions should ideally be assembled immediately prior to use.
  - c. Sterile fields should be prepared as close as possible to the time of use. The potential for contamination increases with time because dust and other particles present in the ambient environment settle on horizontal surfaces over time.
  - d. Once a sterile field is prepared, it should not be left unattended or moved from one room to another. Once the patient enters the room, the sterile setup cannot be used for another patient should surgery be cancelled.
  - e. At the conclusion of surgery, the sterile team will remove gown and gloves, and deposit in the appropriate container inside the room. Hand hygiene should then be performed with an antimicrobial handwashing agent.
5. Postoperative Incision Care
- a. Protect an incision closed primarily with a sterile dressing for 24-48 hours postoperatively unless the physician orders a different dressing routine.
  - b. Site specific sterile dressings should be applied in the Operating Room when indicated (e.g., peritoneal dialysis catheter, VP shunts dressings).
  - c. Perform hand hygiene before and after dressing changes and any contact with the surgical site.
6. Surgical Instruments and Supplies
- a. Endoscopic Instruments
    - i. Endoscopic instruments (e.g., GI endoscopes, bronchoscopes) that come in contact with mucous membranes will be high-level disinfected. After high-level disinfection, the endoscope will be covered with a clean paper sheath and labeled with date and reprocessor's initials. Additionally, a green tag will be attached to the scope indicating the scope has been appropriately disinfected and is ready for use. No scope should be used if the green tag is not attached. After use on a patient, a yellow tag is attached to the scope indicating the need for reprocessing. Endoscopic instruments (e.g., laparoscopes, arthroscopes) that come in contact with sterile tissue will be sterilized. Refer to the "Cleaning, Disinfection, and Sterilization Patient

Care Items Policy” and the Perioperative Services policy: “Flexible Endoscope Care and Handling.”

- ii. All staff responsible for cleaning and disinfecting endoscopic instruments must be competency tested at the completion of initial training and at least annually thereafter. Only an authorized lead worker or supervisor may perform competency testing. Refer to Appendix 2 in the Endoscope Infection Control Policy for the Endoscope Competency Checklist. Competency test results will be maintained on file.
  - iii. Staff responsible for high level disinfection shall attend the UNCH High Level Disinfection workshop provided by the Infection Prevention department, ideally on an annual basis. The workshop is offered approximately every month, usually at Hillsborough Hospital. Contact Infection Prevention for details and to register.
  - iv. For tracking purposes, there must be a system in place for documenting the use of reusable, lumened flexible gastrointestinal endoscopes and bronchoscopes as these are the two types of scopes that have been associated with outbreaks in the literature. Documentation should include the patient’s name, medical record number, procedure, endoscopist, and identifier of the endoscope used.
- b. Implantable Devices
- All implantable devices will be sterile prior to insertion. Many devices are received pre-sterilized. Manufacturer recommendations and the Operating Room Policy should be followed for use of these objects. Other devices may require sterilization at UNC Health Care prior to insertion.
- c. Reuse of Metal Implants
- i. Metal implants which have been inserted into and removed from a patient during the same surgical procedure or used in another patient may be used only in accordance with the following procedure. This procedure applies to metal implants only.
  - ii. Metal implants, plates, and screws (not labeled as single use) may be reused during the same surgical procedure or used in another patient when the implants, plates, or screws:
    - have been inserted or attempted to be inserted and then removed from a patient during the same surgical procedure
    - have been determined by the attending physician to be suitable for and capable of withstanding cleansing and re-sterilization, even when contaminated with body fluids of infectious agents
    - have not been damaged, deformed, or overstressed during their insertion or attempted insertion and removed; and
    - are structurally, mechanically, and practically safe and effective for use.
  - iii. Nursing staff will segregate all used implants, plates, or screws during the procedure for the attending physician to inspect at the end of the procedure.
  - iv. Metal implants, plates, and screws approved by the attending physician will be returned to the reprocessing area for cleaning and sterilization.
  - v. Removed orthopedic implants requested by patients are cleaned, sterilized and placed in a container before being given to a patient.
- d. Ultrasound Probes

If ultrasound is used intraoperatively on sterile tissue, the probe must be cleaned and sterilized (according to the manufacturer's IFU) before the next patient use. An ultrasound probe that is used on mucous membranes must be cleaned and high-level disinfected (e.g., soaked in 2% glutaraldehyde for 20 minutes or according to manufacturer's recommendation) prior to the next patient use. The above reprocessing guidelines must be followed even if a sterile probe cover was used. This recommendation in the CDC guidelines is reinforced with findings that ultrasound probe covers have a high rate of perforation even before use.

- e. Presterilized Manufactured Products
  - i. Products may be unpacked from shipping cartons in semi-restricted zones. Shipping cartons or boxes are not stored in the semi-restricted zone.
  - ii. CD supplies in the Sterile Supply Room will be routinely rotated and restocked by Central Distribution. Specialty supplies will be routinely rotated by the Inventory Technicians.
  - iii. Before opening products, packages should be inspected for sterile integrity. (Refer to Appendix 6.)
- f. Reusable Items
  - i. Reusable surgical instruments and materials should be decontaminated after use by placing in a washer/disinfector cycle or manually per manufacturer's recommendations.
  - ii. Surgical instruments are sterilized according to published guidelines and manufacturer's recommendations. Reprocessed packaged instruments will be standard wrapped and sterilized in a steam autoclave:
    - Hi-vac                                      4 minutes            270°F
    - Gravity displacement            15 minutes            270°F
  - iii. Fiberoptic equipment (e.g., laparoscopes, arthroscopes) should be sterilized according to manufacturer's recommendations. If sterilization is not feasible, these items require high-level disinfection. Follow guidelines in the Infection Control policy: "Cleaning, Disinfection and Sterilization."
  - iv. Laryngoscope blades and handles should be minimally high level disinfected and packaged between patients.
- g. Immediate Use Sterilization
  - i. Immediate use sterilization may be performed if the patient care item is needed immediately (e.g., to reprocess the inadvertently dropped instrument) or for sterilizing patient care items that cannot be packaged, sterilized, and stored prior to use. When feasible, immediate use sterilization should not be utilized for implantable surgical devices.
  - ii. Instruments/items must be decontaminated and placed into a rigid, sterilization container (e.g. Riley Flash pack). Generally the minimum exposure time for immediate use sterilization in rigid containers is 10 minutes at 270°F.
  - iii. Sterilized items must be transported from the sterilizer to the patient maintaining sterility. Surgical instruments sterilized for immediate use must be cooled prior to use by the surgeon. This may be accomplished by either air-cooling or immersion in cool sterile water.

- iv. Sterilizer function must be monitored by mechanical, chemical, and biological monitors. To ensure that the minimum temperature is employed, the operator will sign their first initial and last name on the temperature tape/temperature chart. Instruments reprocessed should be documented in the sterilization section of the perioperative record. Refer to the Perioperative Services policy “Immediate Use Sterilization.”
  - h. Shelf Life of Packaged, Sterilized Items
    - i. Items sterilized in the CPD will not have an expiration date. These items may be used as long as the integrity of the package is not compromised by becoming torn, wet, punctured, opened, or having an unsealed or broken seal/lock. (For the complete policy on indefinite shelf life, refer to the policy: “CPD and other Surgical Services Support Areas Using Sterilizers.”)
7. Sterilizer Monitoring, Documentation, and Maintenance
- a. Surgical instruments and supplies used for surgery must be sterile. To ensure that material processed in the sterilizer has been exposed to the proper sterilization parameters, the sterilizer will be monitored using various parameters (physical, chemical, and biological) and results documented.
  - b. Positive Spore Test: If spores are not killed in routine spore tests, the sterilizer should immediately be checked for proper use and function. In collaboration with Hospital Epidemiology, a decision will be made on the need for recalling items. Implantable objects will be immediately recalled. If spore tests remain positive after proper use of the sterilizer is documented, its use should be discontinued and it should be serviced.
  - c. Records pertaining to the routine monitoring and usage of sterilizers will be maintained in an organized fashion and kept up-to-date. For example, parameter printouts are filed according to date and are stored so that retrieval of information is facilitated. Biological indicator (e.g., Attest) results (e.g., device identified, test and control results indicated) are documented in the sterilization log book and the electronic record. The sterilizer documentation will be retained for 5 years.
  - d. For those areas that utilize sterilizers on a regular basis, biological indicators will be tested at least weekly. Every load should be monitored with a spore test if it contains implantable objects. All sterilizers in the operating room will be numbered so that the sterilizer number can be incorporated into the sterilization records.
  - e. When immediate use sterilization is used, a chemical indicator and the physical indicator (e.g., temperature indicator or tape) will be checked by staff to monitor the effectiveness of the sterilizer. If an implant must be sterilized in this manner, a biological indicator (Rapid Readout), chemical indicator, and physical indicator (temperature tape) will be used.
  - f. When sterilizers in the OR operate as pre-vacuum rather than gravity displacement sterilizers, a Bowie-Dick test is necessary to monitor the effectiveness of then vacuum.
  - g. At least once a week, Central Processing personnel will monitor each sterilizer in the surgical suites with a biological indicator.
  - h. Mandatory in-services/competency testing will be conducted on an annual basis to ensure that all staff members understand the documentation required for OR sterilizers.
  - i. Sterilizers (outside and chamber) will be cleaned on a routine basis (e.g., monthly) according to manufacturer recommendations for cleaning. Cleaning will be done by EVS personnel.

- j. Routine Maintenance Checks: All autoclaves and gas sterilizers in Perioperative Services will be inspected and maintained by the Aramark Service Representative on a 6-month rotation as outlined in the Preventive Maintenance Agreement (PMA). Documentation of inspections are recorded and retained in the Hospital Plant Engineering Department.
8. Support Personnel
  - a. Radiologist, Medical Illustrationist, Pathologist, Plant Engineers, etc., whose service is requested will adhere to the Perioperative Services Infection Control Policy and will be dressed accordingly.
  - b. Equipment: Support personnel will be responsible for their equipment's operation, maintenance, and inspection. They will be responsible for cleaning the equipment prior to entering the restricted zone.
9. Creutzfeldt-Jakob Disease (CJD)

Special precautions are necessary for patients known or suspected to have Creutzfeldt-Jakob Disease (CJD). Healthcare personnel should be familiar with and strictly follow the guidelines provided in the Creutzfeldt-Jakob Disease Infection Control Policy.

### D. Postoperative Care

For general infection control guidelines for patient care, refer to: "Infection Control Guidelines for Adult and Pediatric Inpatient Care Policy."

#### 1. Dressings

Aseptic technique will be used in handling dressings or incision sites. Reinforce the dressing with sterile materials when the dressing becomes saturated. Healthcare Personnel (HCP) should perform hand hygiene with an antiseptic agent before and after dressing changes or any contact with the surgical site. Gloves must be worn for dressing changes.

#### 2. Equipment

##### a. Respiratory Equipment

- i. Oral and nasal airways will be inserted using clean technique. Airways should be transferred with the patient or discarded after use.
- ii. Endotracheal suctioning is done using sterile technique. A sterile catheter is used for each suctioning and discarded. Personnel should wear sterile gloves while suctioning and other PPE as necessary. Fluid used for instillation into the bronchial tree must be sterile.
- iii. Respiratory therapy equipment will receive routine care as specified in Respiratory Therapy Policy and Procedures.
- iv. Adult and pediatric ventilation masks and bags are disposed of after each patient use. The green connecting tubing is disposable and should be discarded between patient uses.
- v. Green O<sub>2</sub> tubing connected to the portable O<sub>2</sub> tank is disposable and should be discarded after each patient.
- vi. Clean suction equipment will be used for each patient. Used suction equipment will be transported with the patient to the postoperative location if it is to be continued.

##### b. Non-Disposable Equipment

- i. Non-disposable equipment should be returned to the place of origin (e.g., Patient Equipment, Anesthesia Workroom, CPD) for reprocessing. All cables used for patient monitoring (e.g., cardiac cables, EKG cables, pulse oximeter) should be disinfected between each patient use.
- ii. Stretchers should be routinely cleaned between patients using an EPA-registered disinfectant. Clean linens will be used for each patient.

### **E. Implementation**

It is the responsibility of the Vice President of Perioperative Services and the Chairs of SOM Departments (e.g., Anesthesiology, Orthopedic, ENT, Surgery, Dental, GYN, Neurology) who utilize the surgical service areas to implement this policy.

### **IV. References**

CDC Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007.

CDC Guideline for Prevention of Surgical Site Infections 1999.

AORN Recommended Practices for Prevention of Transmissible Infections in the Perioperative Nursing 2014.

Strategies to Prevent Surgical Site Infections in Acute Care Hospitals: 2014 Update. The Society for Healthcare Epidemiology of America,

### **V. Reviewed/Approved by**

Hospital Infection Control Committee

### **VI. Original Policy Date and Revisions**

Revised on Mar 2004, June 2004, Jan 2007, Jan 2010, Feb 2013, Feb 2016, Dec 2016<sub>rev</sub>,  
Feb 2017<sub>rev</sub>, Jan 2018<sub>rev</sub>

## Appendix 1: Infection Control Attire in Restricted Zones (Operating Rooms, Procedural Rooms)

The following criteria are minimum criteria based on CDC guidelines and scientific literature:

Purpose: To assure that all personnel are oriented to attire standards that promote an aseptic environment in which to perform surgery/invasive procedures and to prevent cross-transmission of infection from OR personnel to patients.

Personnel include all persons who enter the Semi-restricted and Restricted Zones.

### Scrubs:

- Scrubs are the teal uniforms which are hospital provided and hospital laundered. Specific departments have access to the teal scrubs – ORs in Main/Children's, ASC and HBH, Cath Lab, EP Lab, VIR, L&D, Cysto and BURN. Teal scrubs shall only be worn at work sites. Scrub shirt should be tucked into trousers. All other work uniforms, whether scrubs or street clothes, worn are maintained by the UNC healthcare provider.
- In areas of the hospital where hospital laundered scrubs are provided (e.g., teal scrubs), healthcare personnel should change from street clothes to hospital provided scrubs at the hospital at the beginning of the shift and at the end of the shift change back into their street clothes and leave the scrubs to be laundered.
- Scrubs shall be removed when visibly soiled, contaminated and/or penetrated by blood or other potentially infectious materials.
- Hospital laundered scrubs should be worn only within the clinical campus(s).

### Outside the Clinical Area (Exiting)

- When leaving restricted zones (operating rooms, procedural areas) for public areas, personnel will change scrubs if soiled.
- Mask, disposable bouffant cap, and shoe covers will be removed before entering the non-restricted zone.
- Gloves will be removed/discarded upon leaving an operating room.
- When returning to the restricted zone, hospital-provided scrubs and warm-up jackets ideally should be changed.
- Signs will be posted at exits from restricted areas stating attire requirements.

### Outer/under garments

- Cover gowns (e.g., white coats) are not required as a cover when entering non-restricted areas.
- Undershirts under hospital-provided scrubs may be either crew or v-neck (but must be short sleeved and not have a high neck – turtle or mock neck).

### Hair

- Hair on the head and face (i.e. beards) must be fully covered to prevent shedding of hair and squamous cells. Large sideburns and ponytails must be covered or contained. Disposable bouffant and hood style covers will be provided. Bald and shaved heads must be covered to prevent shedding of squamous cells.
- Personally-owned cloth caps are permitted. Personal head coverings must not be worn for more than one day without laundering. Personal head coverings soiled with blood or OPIM must be discarded and must not be taken home for laundering.

### Warm-up Jackets

- Hospital-provided, hospital-laundered warm-up jackets can be worn over the teal, hospital-provided scrubs within an operating room or procedure room and should be closed to prevent possible contamination to sterile items in the room.
- In restricted areas, where teal scrubs are used, personal home laundered warmup jackets cannot be used.

### Jewelry/Make-up

- Excessive make-up is not permitted. Jewelry should be kept to a minimum. No bracelets or rings should be worn. Wristwatch and wedding band are permitted except when scrubbed. Necklaces are permitted as long as they are completely contained within the sterile gown. Earrings are permitted but must be completely contained under an approved cap or hood.

### Masks

- Masks which fully cover the nose and mouth will be worn when entering the OR procedure room if an operation is about to begin or is underway, or if sterile instruments are exposed. They are to be applied properly so that respiration takes place through the filter, not around it. Masks are securely fitted over the nose and mouth to prevent venting at the sides. Masks must be worn in the correct position throughout the operation. Remove by strings and deposit in the trash, outside an OR. New masks should be donned for each procedure. Do not wear in non-restricted zones.

### Shoes

- Comfortable, closed-toe shoes must be maintained for OR/procedural use. They must be kept clean. Shoe covers will be worn in the restricted zone in those circumstances when splash or splatter of blood or body fluids is reasonably anticipated. Shoe covers should be changed whenever they become torn, wet, or visibly soiled. Shoe covers are to be removed when leaving Surgical Services or a restricted area. Shoe covers may be worn into an OR lounge or break room as long as they are not visibly soiled with blood or body fluids.

### Eye Protection

- Eye protection is provided and must be worn by the sterile team in accordance with the Exposure Control Plan for Bloodborne Pathogens. Prescription eyeglasses must be equipped with solid side shields if used for eye protection.

### Waist (Fanny) Packs

- Fanny packs should be secured to the body and be made of a material that can be cleaned. Cleaning with a germicidal detergent should occur daily and when the pack is visibly soiled. Alternatively, packs may be machine laundered. In order to prevent a potential bloodborne pathogen exposure, no personal items or food should be stored in the packs. When working with a patient on Contact Precautions, the pack should not come in contact with the patient or patient's immediate environment (e.g. wear cover gown or leave outside of patient room).

### Backpacks

- Personal items such as backpacks should not enter the operating room.



## Appendix 2: Surgical Services/Operating Room - Surgical Masking Protocol

PURPOSE: to filter respirations of personnel working in an operating room.

TYPES: masks come in 3 types: mask with face-shield  
mask without anti-fogger;  
mask with anti-fogger

Note: Each is non-fiberglass and has a bacterial filtration efficiency of at least 98 percent when worn correctly. Only disposable masks will be worn. Double masking is not necessary.\*

LOCATION: Masks are located at the scrub sink of each operating room.

- METHOD:
1. Pick up a mask and unfold it completely; apply metal bar to bridge of the nose and press to form it to the nose.
  2. Tie the top strings securely at the back of the head, above the ears.
  3. Stretch the mask under the chin and tie bottom strings securely to the back of the neck.
  4. Mask should be secure but not binding; respirations should pass through the mask and not around it.
  5. After leaving an operating room, at the completion of a procedure, perform hand hygiene and untie the mask touching only the strings to remove and deposit it in a trash receptacle in the scrub room.
  6. Mask should be changed between procedures.
  7. Upon leaving the semi-restricted zone the mask must be completely removed rather than leaving it dangling from the neck.
  8. If the patient requires Airborne Precautions for suspected or known tuberculosis, varicella zoster, or measles, a respirator will be worn. Personnel must receive medical screening, fit testing, and instructions on proper donning and care of the respirator as required by UNC Health Care System's Respiratory Protection Program prior to wearing a respirator.

\* Employees allergic to the disposable mask may wear a cloth mask immediately covered with a disposable mask.

### Appendix 3: Environmental Cleaning and Disinfection in the Operating Room

It is the duty and responsibility of the operating room nursing team (RN, Surgical Technologist, Operating Room Attendant) and Environmental Services to provide an optimally aseptic environment for each patient to ensure quality care and to protect patient and personnel from cross-transmission of microorganisms.

The following components are listed as guidelines for OR environmental cleaning practices:

1. Specified cleaning equipment for types of cleaning to be done. Decontamination and/or disposal of equipment after use.
2. Names of germicidal detergent solutions to be used in cleaning relative to materials and area; dilutions of solutions used.
3. Specific areas and contents to be cleaned and specified time intervals for cleaning are listed as daily, intraoperative, between cases, and terminal cleaning.
4. Personnel are assigned to clean the operating rooms, substerile rooms, and the scrub sink areas.
5. An assignment sheet for each shift with assignments clearly stating the name of the person responsible for areas to be cleaned. Monitored check lists that indicate completion of assignment will be kept for 6 months.
6. A designated supervisor shall make the assignment and monitor performance each shift.
7. Rounds performed by Environmental Services and OR management will evaluate cleaning methods and techniques.
8. Inservice programs to update knowledge and skills in methods of cleaning as indicated.

#### Equipment and Materials to be used in Cleaning

Mop handle, microfiber mop head  
Cleaning cloths and/or paper towels  
Spray bottles with an EPA-registered germicidal detergent

#### Disinfectants

EPA-registered germicidal detergent at recommended use-dilution if applicable  
70 percent alcohol, limited use  
Sodium hypochlorite solution 1:10 (expires in 30 days)  
Quaternary ammonium solution at recommended use-dilution

Cleaning Schedule - Environmental cleaning between cases, at the end of the day and terminal cleaning is performed by Environmental Services personnel.

- A. **Daily:** prior to the first scheduled surgical procedure of the day, the circulator and surgical technologist will inspect the room for cleanliness:
1. Operating room attire will be worn. Masks are only needed when sterile instruments are exposed or if an operation is about to begin or is underway.
  2. An inventory is made of provisions to prevent spreading of contamination: plastic-lined kick buckets, EPA-registered germicidal detergent, unsterile plastic-lined trash bins.
  3. All horizontal (flat) surfaces and spotlights are to be inspected and, if necessary, damp dusted with a clean cloth moistened with an EPA-registered germicidal detergent. Nonsterile gloves are worn to protect hands while cleaning.
  4. Any other visible dust or debris in the room or on equipment will be removed in the same manner.
  5. Sterilizer rims and countertops in adjacent sub-sterile room should be inspected and cleaned as necessary.
- B. **Intra-Operative:** it is the responsibility of the circulator to maintain an aseptic environment to the extent possible:
1. Control traffic pattern to reduce air turbulence. During surgical procedures, all enter the OR via the side/clean core-door when feasible.
  2. Areas contaminated with blood or other potentially infectious materials will be cleaned immediately. Gloves should be worn; paper/cloth towels should be used to wipe up spills. Spray spill with an EPA-registered germicidal detergent. After wiping up a spill, spray the area again with germicidal solution and let air-dry.
  3. Soiled sponges are deposited directly into plastic lined kick buckets. An instrument gloved hand or both is used to count and remove sponges from the bucket into clear plastic count bag pockets.  
  
Note: Gloves are worn only when handling contaminated items; they are removed and hand hygiene performed before handling anything clean (e.g., door handles, telephones, wrapped packages, computer keyboards).
  4. Trash should not be allowed to remain on the floor. Deposit in plastic-lined bins.
  5. Dropped instruments from the sterile field and not needed should be cleaned and placed in the case cart or bottom shelf of the OR table for reprocessing after the case.

C. **Between Cases:**

1. Generally, special cleaning, disinfection or closing of the ORs is not necessary after contaminated or dirty cases or after patients on isolation with the exception of patients on Enteric Contact Precautions. A 1:10 bleach and water solution or bleach wipes for smaller surfaces should be used for Enteric Contact Precautions rooms.
2. For patients on Airborne Precautions, the HEPA units should run for 30 minutes after the patient leaves the OR. An N-95 respirator should be worn by anyone entering the room during that time.
3. Contaminated instruments will be sent to CPD in the case cart by OR personnel.
4. Trash and linen bags are closed and removed to the outside of the room. All hospital linen should be placed in linen bags prior to being sent down the linen chute.
5. Furniture and Equipment: all items in direct use must be wiped with a disinfectant (e.g., OR table, arm boards, safety straps, base of bed, cautery, doctor's headlights, OR spotlights, computer keyboards) after use in a surgical procedure.
6. All horizontal surfaces are to be wiped with a disinfectant.
7. Walls, cabinet doors, step stools, and other equipment should be spot cleaned if visibly soiled.
8. The floor is mopped between cases with a disinfectant/detergent solution. A new microfiber mop head is used for each room. The solution should be changed every 4 rooms, every 4 hours, or when grossly soiled. A perimeter of at least 4 feet around the OR patient table is mopped between cases except for minor procedures; the area is extended as necessary to any adjacent areas of obvious contamination. When indicated, the table should be moved aside for adequate cleaning beneath the OR table. After the last case of the day, the entire floor must be mopped.
9. Deposit linen and trash.
10. PPE, including shoe covers contaminated with blood, should be removed prior to leaving the OR.
11. Staff involved with cleaning between cases must remove gloves after cleaning and perform hand hygiene.

D. **Terminal Cleaning:** Each OR, substerile room and scrub room will be terminally cleaned weekly. OR personnel may assist upon request. An EPA-registered disinfectant is used for cleaning.

1. Furniture/Spotlights: All surfaces of each piece of furniture and the OR spotlights are cleaned. Frames and castors are included in cleaning and should also be cleaned of suture and other entrapped materials. The Operating Room patient table is completely taken apart and scrubbed down, including pedestal and accessories, armboards, etc.
2. Kick buckets (including stand and castors) and waste bins are cleaned and dried well before inserting a plastic liner.

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3. All freestanding equipment including laundry bag stands and castors or machines are wiped down. Caution: Do not spray or allow solution to get into electrical components.
  4. Cabinet and operating room doors are spot cleaned with special attention to handles and frames. Make sure cabinet doors are closed to prevent contamination of contents.
  5. Tops of all structures that are not recessed are wiped with a cloth dampened with a disinfectant.
  6. Intake vent grills are wiped with a disinfectant.
  7. Floors: In the main Hospital and W/C, floors are flooded with a quaternary ammonium solution/disinfectant detergent and left for five minutes; solution is removed with a mop. In ASC, floors are mopped using a quaternary ammonium/disinfectant detergent. A clean, microfiber mop head and fresh disinfectant/detergent solution is used for each OR. Special attention should be given to corners and moldings.
  8. Walls and ceiling-mounted equipment are thoroughly cleaned weekly.
  9. Anesthesia machines and equipment are terminally cleaned by anesthesia personnel in accordance with the Anesthesiology Infection Control Policy.
- E. Scrub Sink Areas: terminally cleaned by methods described above.
1. sink and faucets
  2. shelves
  3. mirrors
  4. walls
  5. floors and moldings
- F. Sub-sterile Room: adjacent to each operating room. Terminally cleaned by the methods above.
1. sinks
  2. counters
  3. shelves
  4. cabinets (outside)
  5. walls - spot cleaned
  6. furniture
  7. ledges
  8. warmers: inside and outside
  9. autoclaves
  10. floor and moldings
- G. The inside of supply cabinets are cleaned monthly. Supplies are removed and shelves are cleaned with alcohol and dried before replacing supplies. All supplies are checked for package integrity and expiration date, if applicable.

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### H. Care of Cleaning Equipment:

Buckets used in cleaning are to be scrubbed and dried.

Mop heads are to be bagged and sent to the laundry.

### J. Disposal of Waste: Refer to Section I, "Waste Disposal."

### K. Refer to the Surgical Services Division Policy "Operating Room Environmental Cleaning Policy and Procedure" (OR IC-2) for additional information.

#### **Appendix 4: Surgical Services/Operating Room - Observers Protocol**

**PURPOSE:** To provide an optimal aseptic environment for safe patient care while enhancing the observer's clinical learning experience.

**SCOPE:** Observers in the Operating Room are medical students, nursing students, allied health students and hospital nursing staff that have requested permission and met the criteria as stated to observe their patient during surgical intervention.

**CRITERIA:** Prior to observing in the surgical suite, medical students, nursing students, allied health students and hospital nursing staff are required OR protocol orientation.

Surgical Services' educators will provide orientation prior to the scheduled observation.

Medical students, nursing students and allied health students will be scheduled in groups by the OR Instructor.

With the exception of medical students, observers will be restricted to one observer per patient.

Unauthorized observers will not be permitted within the sterile field.

#### **OR Observers Orientation Outline**

- Infection Control
  - Health status
  - Proper OR attire
  - Restricted and non-restricted areas
  - Identification of sterile and non-sterile areas
  
- Observers Responsibilities
  - Proper identification
  - Reporting to the OR desk
  - Reporting to circulating nurse
  - Checking OR attire and application of face mask before entering an OR
  - Emergency situations
  - Patient confidentiality
  - Observation protocol
    - \*Surgeons permission (exception made for student nurses)
    - \*Scheduling observation with OR Instructor
  - Restricted to assigned patient
  - Remain outside of the sterile field

Time: 15-30 minutes

## Appendix 5: Surgical Services/Operating Room - Surgical Hand Antisepsis

**Purpose:** Surgical hand antisepsis is performed prior to surgery. This procedure rids the skin of gross dirt and transient microbes; reduces resident microbes, and leaves a residual activity on the skin to retard growth of microbes on the hands and arms of those persons who will be functioning as part of the sterile surgical team. Several studies have shown that a scrub brush or sponge is not necessary to reduce bacterial counts on the hands of surgical personnel to acceptable levels, especially when alcohol-based products are used. It is recommended that an alcohol-based hand rub with 1% CHG (e.g. Avagard) be used. A 4% chlorhexidine-containing preparation will also be available as a surgical scrub.

**Methods:** An alcohol/CHG-based hand rub or an anatomical scrub of the hands and arms to 2" above the elbows with an antimicrobial agent (chlorhexidine gluconate) and a scrub brush prior to gowning and gloving.

**Preparation:**

No bracelets or rings should be worn.

Inspection of hands and arms should reveal no exudative (weeping) dermatitis, open wounds or jewelry. If exudative dermatitis or open wounds are present, report to supervisor and obtain clearance from OHS prior to scrubbing. The use of artificial nails is prohibited. If fingernail polish is used, it must be well maintained and not chipped. Cuticles should be in good condition. All members of the surgical team keep nails trimmed short.

**Procedure:** Surgical hand antisepsis with waterless hand prep (follow manufacturer's recommendations for use)

**For Avagard Surgical Hand Prep:**

1. For the first case of the day, hands should be washed with soap and water at the scrub sink and nails cleaned with a nail stick. Hands should be dried before applying Avagard.
2. Cup hands and hold 1-2 inches from the nozzle of the hand antiseptic dispenser. Depress the foot pump completely to dispense each pump (2ml) of waterless antiseptic hand prep.
3. Pump 1: Dispense one pump of antiseptic hand prep into the palm of one hand. Dip the fingertips of the opposite hand into the hand prep and work it under the nails. Spread the remaining hand prep evenly over the hand and up to just above the elbow covering all surfaces.
4. Pump 2: Using another 2 ml of the hand antiseptic, repeat the above procedure with the other hand.
5. Pump 3: Dispense another 2ml of the antiseptic hand prep into either hand and reapply to all aspects of both hands up to the wrist. Allow to air dry before donning gloves.
6. To facilitate drying, continue rubbing hand prep into hands until dry.



### For Traditional Scrub Procedure:

#### A. Prior to scrub:

1. The first case of the day, hands should be washed with soap and water at the scrub sink and nails cleaned with a nail stick.
2. Open one scrub brush aseptically; place on shelf in an accessible position.
3. Make all last minute adjustments in water temperature. Time of scrub is at least 5 minutes for the first surgical scrub of the day and at least 2-5 minutes for subsequent scrubs.
4. Wet hands and arms from fingers to the elbows; press the floor bulb to activate the antiseptic dispenser (chlorhexidine gluconate). Spread antiseptic on hands and arms in a scrubbing manner and cover all skin; rinse well.
5. Prior to the first surgical scrub of the day, clean underneath each fingernail. Remove plastic nail stick from brush package, and under running water clean under each fingernail and around cuticles; drop stick without dropping hands.

#### B. Scrub:

1. Keep hands positioned higher than the elbows throughout scrub.
2. Pick up scrub brush without touching the outside of the package. Wet well.
3. Squeeze sponge side to activate suds, or if plain brush, add detergent from the dispenser; add water throughout the procedure to maintain a wet lather.
4. Scrub each hand separately with the scrub brush, using vertical strokes to all finger surfaces; starting with the thumb, scrub all sides of each finger, nails and webs; scrub palm and back of hand. Use the same plan for the other hand. You should scrub each hand approximately 1 1/2 minutes for a 5 minute scrub. Do not rinse.
5. After both hands have been scrubbed, scrub each arm separately with a rotary motion in sequence, starting at the wrist to 2" above the elbow; be careful not to touch clothing or faucets; scrub circulating around the arm from wrist to elbow in one direction; spend approximately 1 minute/arm for a 5 minute scrub. Rinse the brush before starting the second arm.
6. After both arms are finished, drop scrub brush and rinse from fingertips to elbows, keeping hands higher than elbows, until all suds are removed.
7. With hands higher than the elbows, up and away from the body so that water runs from the tips of the fingers toward the elbow, back into the OR. Hands are dried with a sterile towel.

**Appendix 6: Guidelines for Monitoring of Sterile Items in Storage and Prior to Use**

Purpose: To assure the integrity of sterile packages has not been compromised in storage or handling.

1. All items sterilized will not have an expiration date. These items may be used as long as the integrity of the package is not compromised by becoming torn, wet, punctured, opened or have an unsealed or broken seal/lock.
2. Prior to use each sterile package or tray must be checked for tears, evidence of moisture, punctures, compromised integrity and unsealed or broken seals or locks. Metal trays with perforated tops must be checked for the presence of intact filters.
3. Verify that the sterilizer tape or the tamper-proof indicator has changed to proper color.
4. Verify that the inside indicator has changed to proper color.
5. Any package that has fallen or been dropped on the floor must be inspected for damage to the packaging or contents. If the package is heat-sealed in impervious plastic and the seal is still intact, the package should be considered not contaminated. If undamaged, items packaged in plastic need not be reprocessed. Paper wrapped items that fall or are dropped on the floor are considered contaminated.
6. All patient care supplies (sterile and non-sterile) must be stored on shelves at least 8 inches off the floor and 5 inches below the ceiling.

## Appendix 7: UNC Health Care System Procedure Manual - Selection of Draping and Gowning Material

**PURPOSE:** To give guidelines for evaluation of gowning and draping materials. Gowns and drapes used during surgical procedures may be linked in the prevention of wound infection through implementation of proper aseptic techniques.

**PROCEDURE:** In the selection of draping and gowning material the following recommended practice should be used to choose the appropriate material. Use materials that are effective barriers when wet.

### I. RECOMMENDED PRACTICE

The surgical gowns and drapes should be made of material that establishes a barrier to minimize the passage of microorganisms between nonsterile and sterile areas.

#### A. Supportive Statements:

1. Materials should be resistant to penetration by blood and other liquids.
2. Unused disposable gowns and drapes should not be resterilized unless a manufacturer provides written instructions for reprocessing (refer to the Infection Control Policy: "Reuse of Single-Use Devices").
3. Materials should be resistant to tears, puncture, strain, and abrasion.
4. Quantitative data should be available to show that materials provide an effective barrier to microbes.
5. Stockinet cuffs of the gown should be covered by gloves during the procedure.

### II. RECOMMENDED PRACTICE II

Gowns and drapes should be made of materials that are safe and comfortable for use in the operating room environment.

#### A. Supportive Statements:

1. Materials should meet or exceed the requirements of the National Fire Protection Agency regulations.
2. Materials should be as lint free as possible to reduce the dissemination of particles into the wound and environment.
3. Materials should maintain an aseptic barrier when used according to manufacturer's directions.

### III. RECOMMENDED PRACTICE III

Policies and procedures for evaluation of gowning and draping materials should be written, reviewed annually, and readily available within the practice setting.

- A. Supportive Statements:
  - 1. These policies and procedures should establish guidelines for quality assurance monitoring following evaluation of gowning and draping materials.
  - 2. These policies and procedures establish authority, responsibility, and accountability.
  - 3. This information should be included in the orientation and ongoing education of all appropriate personnel in the practice setting.

#### IV. National Guidelines to Assist in Implementation of Disposable Gowns and Drape Materials

In the use of the materials UNC Health Care System considers the following national guidelines to assist in implementation of disposable gowns and drape materials:

- A. The ability to resist penetration of moist contamination is not always compatible with other factors considered desirable in materials such as comfort, economy, safety, and anesthetic appeal.
- B. Materials should be nonabrasive and free of toxic ingredients, nonfast dyes, and noxious odors.
- C. Materials should be nonglare and of a color that minimizes distortion from reflected light.
- D. Gowns should fit and allow freedom of movement.
- E. Gowns and drapes should maintain an environment appropriate to body temperature.
- F. The capabilities of the practice settings as well as the community requirements for collecting, transporting, and disposing of waste materials to meet ecological and pollution standards should be considered.
- G. Materials should maintain integrity over the expected life of the garment or drape as claimed by the manufacturer.

## Appendix 8: Implementation of Isolation in Pre-Op, ORs, and PACU

### Contact Precautions (blue sign) / Enteric Contact Precautions (green sign)

- General Guidelines
  - Hand hygiene should be performed before and after patient contact and when indicated in the Hand Hygiene Infection Control Policy. For patients on Enteric Contact Precautions, soap and water must be used for hand hygiene.
  - Standard Precautions should be followed for all patients and, in addition, Contact/Enteric- Contact Precautions should be followed for patients infected or colonized with microorganisms that are transmitted by direct or indirect contact with patients or items/surfaces in the patient environment (e.g., MRSA, VRE, multidrug resistant GNRs, *C. difficile*).
  - Additional control measures may be instituted by Hospital Epidemiology in an outbreak setting.
- Isolation Attire
  - All personnel (nurses, surgeons, anesthesiologists, techs) must wear appropriate isolation attire (isolation gown/cover gown, gloves) when having direct contact with a patient on Contact Precautions or Enteric-Contact Precautions
  - Gowns and gloves should also be worn when coming in contact with items/patient equipment that may contain high concentrations of microorganisms (e.g., contamination with fecal matter, blood, wound drainage).
  - Eyewear should be used as per standard precautions.
- Environmental Cleaning
  - All patient equipment that has direct contact with the patient or has been handled by potentially contaminated gloves must be disinfected with an EPA-registered disinfectant detergent (i.e. MetriGuard, SaniCloth) or 1:10 bleach and water. For patients on Enteric Contact Precautions, bleach wipes or solution must be used.
  - In the Operating rooms, established routines for cleaning and disinfection between cases are acceptable.
  - Staff assigned to clean an OR room used for a patient on Contact Precautions must wear gloves and a yellow isolation gown (or other disposable isolation gown/cover). After cleaning is completed, the gloves and cover gown should be removed and placed in a trash bag inside the OR. Gloves should be worn to carry the trash to the bin and after depositing the trash bag in the bin, gloves should be removed and hand hygiene performed.
  - Privacy curtains should be replaced every 6 months and if visibly contaminated.
- Patient Care Supplies
  - Dispose of any unused supplies that are opened, wet, or visibly soiled/ contaminated. (Any unused supplies that can be used by the patient may be sent with the patient.)

## Infection Control Guidelines for Perioperative Services

- Patient care supplies in cabinets, carts, and drawers should be retrieved with clean hands.
- At the end of the case, supplies left on the anesthesia cart should be discarded. Unopened medication vials may be disinfected and used on another case.
- Patient Transport
  - All personnel involved in the transport of a patient to and from the OR and to PACU/ICU will wear gown and gloves if they anticipate contact with the patient.
  - If the patient is transported via a stretcher/recliner, the stretcher/recliner must be thoroughly decontaminated with an EPA-registered disinfectant detergent. Surfaces must appear wet and allowed to air dry for at least 1 minute.
- Additional Area-Specific Guidelines
  - Pre-Op Area: Patients on Contact/Enteric Precautions in Pre-Op are not required to be in an isolation room. They may be managed in individual bed spaces. Ensure that the requirement for Contact or Enteric Contact Precautions is communicated to Anesthesia and OR personnel prior to the patient leaving for the OR.
  - Intra-Op: OR personnel should wear clean gloves and an isolation gown during procedures such as positioning the patient on the OR table. Anesthesia personnel should wear gloves and gown for procedures such as intubation and placement of peripheral venous catheters that does not require the use of a sterile cover gown. During the surgical procedure, isolation attire is not necessary unless personnel not scrubbed in for the case need to have direct contact with the patient. Ensure that the requirement for Contact Precautions/Enteric Precautions is communicated to PACU personnel.
  - PACU: PACU patients on Contact/Enteric Precautions are not required to be in an isolation room. They can be managed in the individual patient bed spaces. Ensure that the requirement for Contact/Enteric Precautions is communicated to the Floor/ICU prior to the patient leaving the PACU.

### **Airborne Precautions**

- Patients with Known or Suspected TB
  - Elective operative procedures on patients with known or suspected TB should be delayed until the patient is no longer infectious. When emergency cases must be performed, the doors to the operating room should be closed and traffic in and out of the room should be kept to a minimum. Attempts should be made to perform the procedure at a time when other patients are not present in the operative suite (i.e., end of day) and when a minimum number of personnel are present. During transport to and from the OR, the patient will wear a tight fitting surgical mask. The only exception would be a sedated patient who is being transported on a closed system ventilator or manual ventilation bag with a HEPA filter. The patient who is brought to the holding area for surgery should go directly into an operating room. If the operating room is not ready to receive the patient, the patient must be placed in a negative pressure isolation room in PACU. Personnel present when operative procedures are performed will wear a respirator rather than a standard surgical mask. The anesthesia machine should be equipped with a disposable anesthesia filter (Filtaguard).

## Infection Control Guidelines for Perioperative Services

- Two portable HEPA units will be used in the operating room for cases having known or suspected pulmonary tuberculosis or when a body cavity with known or suspected *M. tuberculosis* is entered or disrupted. The unit will be turned on (highest setting) prior to initiating the procedure. One unit will be placed near the patient's head and one unit will be placed near the entrance door. The unit should be run for 30 minutes following the patient leaving the room. Staff should continue to wear respirator during this time.
- Before the patient is transported from the OR, OR personnel will contact PACU/PCS to confirm the Airborne Isolation Room is ready and the negative pressure has been established with a tissue check. Note: When the room is changed from a positive to negative pressure, the room may take 10 minutes to reach negative pressure. When the patient leaves PACU, close the door and do not use the room for another patient for at least 30 minutes. The receiving inpatient area should be notified that the patient requires an Airborne Isolation Room.

### **Airborne and Contact Precautions**

- Patients with Known or Suspected Varicella/Chicken Pox or Measles
  - Airborne and Contact Precautions will be implemented. During transport patients will wear a tight fitting surgical mask and be covered from chin to toes with a sheet. Personnel may wear a surgical mask during the operative procedure unless the HCP is not immune in which case a respirator should be worn. HCP would be considered immune if they had the disease as a child or have received the vaccines.
- Patients with Known or Suspected Varicella Zoster/Shingles
  - Contact Precautions will be implemented. For immunocompromised patients or those with lesions on 3 or more dermatomes, Airborne Precautions should also be implemented. During transport patients will have their lesions covered with a sterile dressing unless the lesions are on the face. If the lesions are disseminated, a sheet will be used to cover the patient from chin to toes. A mask will not be required of the patient. Personnel may wear a surgical mask during the operative procedure unless the HCP is not immune to chicken pox in which case a respirator should be worn.

### **Droplet Precautions**

- The patient will wear a surgical mask during transportation to and from Perioperative Services. Personnel will wear a surgical mask during the OR procedure and when the patient is not masked.

### **Protective Precautions**

- The patient will wear a surgical mask during transport to and from Perioperative Services. Personnel will wear a surgical mask only during the OR procedure.