# 01.47 Guideline for Prevention of Surgical Site Infections

Purpose

To prevent Surgical site infections (SSI) in all patients who have inpatient or outpatient surgical procedures.

Audience

All employees of UTMB hospitals, clinics, Victor Lakes outpatient specialty care and surgical center, and all UTMB surgical faculty, residents and fellows and medical students.

Policy
Preoperative

**Preparation of the patient**

- Whenever possible, identify and treat all infections remote to the surgical site before elective operation and postpone elective operations on patients with remote site infections until the infection has resolved.
- Do not remove hair preoperatively unless the hair at or around the incision site will interfere with the operation.
- If hair is removed, remove immediately before the operation, preferably with electric clippers.
- Adequately control serum blood glucose levels in all diabetic patients and particularly avoid hyperglycemia preoperatively.
- 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 form of tobacco consumption (e.g., chewing/dipping).
- Do not withhold necessary blood products from surgical patients as a means to prevent SSI.
- Instruct patients to shower or bathe with an antiseptic agent on at least the night before the operative day.
- Thoroughly wash and clean at and around the incision site to remove gross contamination before performing antiseptic skin preparation.
- Use an appropriate antiseptic agent for skin preparation.
- Keep preoperative hospital stay as short as possible while allowing for adequate preoperative preparation of the patient.

**Hand/forearm antisepsis for surgical team members**

- Do not wear hand or arm jewelry.
- Keep nails short and do not wear artificial nails. (see Policy 1.14 Hand-hygiene for all Hospital Employees at www.utmb.edu/hce)
- Hands and forearms may be prepared for surgery by either a surgical scrub or application of an alcohol solution (Avagard).

*Surgical scrub*

- Clean underneath each fingernail prior to performing the first surgical scrub of the day. Perform a preoperative surgical scrub for at least 2 to 5 minutes using an appropriate antiseptic. Scrub the hands and forearms up to the elbows. After performing the surgical scrub, keep hands up and away from the body (elbows in flexed position) so that water runs from the tips of the fingers toward the elbows. Dry hands with a sterile towel and don a sterile gown and gloves.

*Alcohol*

- Wash hands if visibly soiled
- Clean under the nails with nail stick
- Dispense one pump (2ml) into the palm of one hand
- Dip the fingertips of the opposite hand into the gel and work it under the nails
- Spread the remaining lotion over the hand and up to just above the elbow
- Using another 2ml of gel, repeat with the other hand
- Dispense another 2ml of gel into either hand and reapply to all aspects of both hands and up to the wrist
- Allow to dry before donning gown and gloves

**Management of infected or colonized surgical personnel**

- Educate and encourage surgical personnel who have signs and symptoms of a transmissible infectious illness to report conditions promptly to their supervisor and Employee Health Service personnel.
- Personnel who have any evidence of an infection or possible infection on their hands or forearms *may not* participate in a surgical operation.
- Exclude from duty, surgical personnel who have draining lesions from any other skin sites until infection has been ruled out or personnel have received adequate therapy and infection has resolved.
- Do not routinely exclude surgical personnel who are colonized with organisms such as *S. aureus* (nose, hands, or other body site) or group A *Streptococcus*, unless such personnel have been linked epidemiologically to dissemination of the organism in the healthcare setting.

**Antimicrobial prophylaxis**

- Administer a prophylactic antimicrobial agent only when indicated, and select it based on its efficacy against the most common pathogens causing SSI for a specific operation and published recommendations.
- Administer by the intravenous route the initial dose of prophylactic antimicrobial agent, timed such that a bactericidal concentration of the drug is established in serum and tissues when the incision is made. Maintain therapeutic levels of the agent in serum and tissues throughout the operation and until, at most, a few hours after the incision is closed in the operating room.
- Before elective colorectal operations mechanically prepare the colon by use of enemas and cathartic agents. Administer nonabsorbable oral antimicrobial agents in divided doses on the day before the operation.
- For high-risk cesarean section, administer the prophylactic antimicrobial agent immediately after the umbilical cord is clamped.
- Do not routinely use vancomycin for antimicrobial prophylaxis.

Intraoperative

**Ventilation**

- Maintain positive-pressure ventilation in the operating room with respect to the corridors and adjacent areas.
- Maintain a minimum of 15 air changes per hour, of which at least 3 should be fresh air.
- Filter all air, recirculated and fresh, through the appropriate filters per the American Institute of Architects' recommendations.
- Introduce all air at the ceiling, and exhaust near the floor.
- Keep operating room doors closed except as needed for passage of equipment, personnel, and the patient.
- Limit the number of personnel entering the operating room to necessary personnel.

**Cleaning and disinfection of environmental surfaces**

- When visible soiling or contamination with blood or other body fluids of surfaces or equipment occurs during an operation, use an EPA-approved hospital disinfectant to clean the affected areas before the next operation.
- Do not perform special cleaning or closing of operating rooms after contaminated or dirty operations.

**Sterilization of surgical instruments**

- Sterilize all surgical instruments according to published guidelines.
- Perform flash sterilization only for patient care items that will be used immediately (e.g., to reprocess an inadvertently dropped instrument). Do not use flash sterilization for reasons of convenience, as an alternative to

purchasing additional instrument sets, or to save time.

**Surgical attire and drapes**

- Wear a surgical mask that fully covers the mouth and nose when entering the operating room if an operation is about to begin or already under way, or if sterile instruments are exposed. Wear the mask throughout the operation.
- Wear a cap or hood to fully cover hair on the head and face when entering the operating room.
- Do not wear shoe covers for the prevention of SSI.
- Wear sterile gloves if a scrubbed surgical team member. Put on gloves after donning a sterile gown.
- Use surgical gowns and drapes that are effective barriers when wet (i.e., materials that resist liquid penetration).
- Change scrub suits that are visibly soiled, contaminated, and/or penetrated by blood or other potentially infectious materials.

**Asepsis and surgical technique**

- Adhere to principles of asepsis when placing intravascular devices (e.g., central venous catheters), or when dispensing and administering intravenous drugs.
- Assemble sterile equipment and solutions immediately prior to use.
- Handle tissue gently, maintain effective hemostasis, minimize devitalized tissue and foreign bodies (i.e., sutures, charred tissues, necrotic debris), and eradicate dead space at the surgical site.
- 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.
- 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.

Postoperative incision care

- Protect with a sterile dressing for 24 to 48 hours postoperatively an incision that has been closed primarily.
- Wash hands before and after dressing changes and any contact with the surgical site.
- When an incision dressing must be changed, use sterile technique.
- Educate the patient and family regarding proper incision care, symptoms of SSI, and the need to report such symptoms.

## Reference

Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for Prevention of Surgical Site Infection, 1999. Infect Control Hosp Epidemiol 1999; 20:247.