Prevention of Surgical Site Infections (SSIs) and Antimicrobial Prophylaxis

Note: For appropriate antimicrobial selection, see the Preoperative Antibiotic Order Grid Search Form on the ASP website.

Educate Patients Preoperatively

- Discontinue all forms of tobacco at least 30 days prior to surgery.
- Bathe with 4% chlorhexidine gluconate (CHG) soap the day before and day of surgery (i.e., at least twice).
  o Document CHG bathing in IHIS
- After showering with 4% CHG soap, do not use:
  o Lotions
  o Moisturizer
  o Make-up
  o Deodorant, or
  o Any other products on the skin near the part of the body that will be cut for surgery
- For at least 48 hours before surgery, do not shave near the part of the body that will be cut for surgery.
- Notify the surgeon (or his designee) if any illness or infection develops before the day of surgery.
- Health Care Workers (HCW) must document education provided in IHIS.

Preoperative Clinical Processes

- Identify and treat all nonsurgical site infections prior to surgery.
- Postpone elective operations until infection is resolved.
- Assess nutritional status of patient and address before surgery, as feasible.
- Check HbA1c in the preoperative setting; address abnormal levels before surgery, as feasible.
- Document an assessment of allergy and the associated reactions to antimicrobials.
- Activate preoperative order sets.
- Collect nasal screens as indicated for high-risk surgical procedures; monitor results.
  o Administer mupirocin nasal ointment twice a day for 5 days if MSSA or MRSA is positive.
  o Perform CHG bathing daily for 5 days prior to surgery, if MSSA or MRSA is positive.
  o If results are pending, administer mupirocin and perform CHG bathing until results are finalized; discontinue if negative.
- Refer to the OSUWMC Preoperative Antibiotic Order Grid for antimicrobial selection, dosing, re-dosing, and discontinuation.
  o Adjust dosage for obesity.
- The optimal time to start all antibiotics is 15-60 minutes prior to incision; administration should be completed prior to incision, unless listed below:
  o Vancomycin at 2 hours
  o Ciprofloxacin at 1 hour
  o Fluconazole at 1 hour
  o Gentamicin at 1 hour
- For all surgeries perform gross removal of debris from the surgical site(s), provide targeted bathing of the surgical site and surrounding skin folds using disposable SAGE cloth(s).
- For patients undergoing elective colorectal surgery, a standardized bowel prep kit is supplied at the pre-op clinic visit and includes:
  o CHG Foam for bathing
  o Polyethylene glycol 3350 (Miralax®) and bisacodyl (Dulcolax®) for a mechanical prep
  o Neomycin/ Metronidazole (Flagyl®) tablets for GI tract decontamination
  o All components are recommended
- Remove hair only if it interferes with the operative site using clippers or depilatory, no razors.
  o If necessary, hair should be removed immediately prior to the procedure. Hair removal should not occur in the OR.
- HCWs must keep nails short.
  o Artificial nails are not permitted.
  o No nail polish is permitted in perioperative area.
  o Clean underneath fingernails prior to first surgical scrub.
- Complete a 3-minute preoperative scrub using antiseptic soap, or use an alcohol-based surgical antiseptic (e.g., Avagard®) according to manufacturer’s directions.
  o See Aseptic Technique Policy
- Keep patients warm in the immediate preoperative period.

Intraoperative Clinical Processes

- Comply with Association of perioperative Registered Nurses (AORN) standards for OR asepsis.
- Avoid immediate-use steam sterilization (IUSS) (i.e., flashing) of instruments and implants.
  o Check sterility of instruments during setup/before use.
- Avoid traffic in and out of the OR to ensure positive air pressure is maintained throughout the case.
- Comply with the Perioperative Attire Policy
  o Wear a cap / hood to fully cover hair / beard and secure a surgical mask to completely cover the nose/mouth when entering the suite. This must be done from the time sterile supplies are opened until a sterile dressing is applied to incision.
  o Wear sterile gloves if working as a scrubbed surgical team member.
  o Do not bring personal belongings into the OR suite, unless relevant and/or necessary for the care of the patient and/or research. Belongings should not be contained in items that are constructed of porous material.
Use sterile technique when placing central intravascular devices, (i.e., large sterile drape, cap, mask with face shield, sterile gown, sterile gloves).

Follow [Blood and Body Fluid Exposure Protocol](#)

Refer to [Safe Sharp Handling at the Operative Field Policy](#) for appropriate tool handling

Sterile gloves should be changed:
- when a visible defect is noted
- when suspected or actual contamination or perforation occurs;
- for procedures involving cutting of bone; this may be hourly or more
- whenever gloves begin to swell, expand, or become loose on the wearer’s hands
- immediately following the procedure

**ChloraPrep® is the preferred skin prep.** Prepare initial and anticipated surgical fields with ChloraPrep®.

Exceptions:
- **DO NOT** use ChloraPrep® internally; on open wounds; in contact with meninges; in or around ears, eyes, nose, or mouth
- **DO NOT** use DuraPrep™ on patients with a known allergy to iodine or isopropyl alcohol, or on open wounds, or mucous membranes.
- **DO NOT** use DuraPrep™ on patients with a known allergy to iodine or isopropyl alcohol, or on open wounds, or mucous membranes.
- Chlorhexidine gluconate soap 4% is acceptable for prepping external genitalia.
- Povidone-iodine is acceptable for the face, mucous membranes, or perineal areas.
- Sterile saline is to be used as skin prep for open wounds.

- Actively warm patients intraoperatively for all major surgeries (temperature > 36ºC or 96.8ºF).
- Control serum blood glucose to 140-180 mg/dL in all hospitalized patients
- Re-dose prophylactic antibiotics, if indicated, to maintain adequate concentrations during the case.
- Handle tissue gently to minimize tissue damage, maintain effective hemostasis, minimize devitalized tissue, and eradicate dead space.
- If infection is suspected, obtain aerobic, anaerobic, acid fast and fungal cultures intraoperatively; place specimens, tissue, and foreign material in appropriate containers, avoid formalin for culture.
- If drainage is indicated, use a closed-suction drain placed at a separate incision. Sending specimens at the time of insertion is fine, but should not be obtained after the patient has left the OR; i.e. as the drain is colonized thereafter.
- Apply a sterile dressing to cover the incision.
- If the surgical site is heavily contaminated; perform delayed primary skin closure or allow incision to heal by secondary intention; or consider application of vacuum-assisted closure for wound management.

### Educate Patients Post-operatively

- Clean your hands frequently.
- Read/follow instructions for post-op incision care.
- Notify health care providers as soon as signs or symptoms of an SSI develop.
- HCW must document education provided in IHIS.

### Postoperative Clinical Processes

- Remove and discard all PPE and perform hand hygiene
- Change soiled surgical scrubs immediately
- Perform hand hygiene before and after any contact with the surgical site and before donning PPE.
- Clean and disinfect visibly soiled environmental surfaces with a hospital approved disinfecant before the next operation.
- Control serum glucose in diabetics and non-diabetics.
- Consider use of supplemental oxygen in the immediate post-op period to optimize tissue oxygenation
- Remove surgical drains as soon as possible following the procedure.
- Remove urinary catheter as soon as possible.
- Keep primarily closed incisions covered with a sterile dressing until POD 2.
- The primary service usually removes the intraoperative dressing and MUST provide guidance for the patient as to showering etc.
- Access Mosby’s on Onesource for procedures that address post-operative wound care and dressing changes. Consider referencing the following titles:
  - **Dry and Moist-to-Dry Dressing**
  - **Sterile Dressing Change with Packing Procedure**
  - **Postoperative Care: Immediate Recovery Period**
  - **Postoperative Care: Convalescent Period**

### Orderset

- **Preoperative Antibiotic Order Grid Search Form**
- Preoperative antibiotic orders for specific surgeries are in individual surgical order sets.

### Quality Measures

- NHSN - SSI Infection Rates
- Administration of appropriate pre-op antibiotics within 1 hour prior to incision

### References

- Center for Disease Control. Guideline for Prevention of Surgical Site Infection, 1999. Infection Control and Hospital Epidemiology, 1999; Vol. 20, No. 4, 247-278.


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**Guideline Approved**


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**Policies/ Guidelines**

- Perioperative/ Periprocedure Glucose Management Guideline
- Aseptic Technique Policy
- Blood and Body Fluid Exposure Policy
- Safe Sharp Handling at the Operative Field Policy
- Perioperative Attire Policy

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