## Surgical Site Infection (SSI) Prevention Strategies

Component of SAFE HAI 2.0 Roadmap

### Gap Analysis Questions

<table>
<thead>
<tr>
<th>Patient/family education</th>
<th>Yes</th>
<th>No</th>
<th>If answered question “No” – identify the Specific Action plan(s) including persons responsible and timeline to complete.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a) Prior to procedure, the patient/family is educated on SSI prevention including identifying modifiable risk factors e.g., smoking, obesity, diabetes management, and preoperative skin care [1-4].</td>
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<td>1b) The patient has been educated about symptoms of a surgical site infection, what the health care personnel (HCP) and prescribers are doing to prevent an infection, and what the patient can do to help prevent an infection [1,5].</td>
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<td>1c) Prior to discharge, the patient/family is educated using teach back on post-op surgical care e.g., when to resume showering, swimming and other activities, hand hygiene, wound care and signs and symptoms of infection to report to provider [2].</td>
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### Cleaning surgical equipment & environment

| The facility manages use of immediate use steam sterilization. | ☐ | ☐ | |
| 2a) Limit immediate use steam sterilization (IUSS) to instances when there are not other viable options (i.e., do not use for convenience, preference or when adequate inventory could eliminate the need for it) [1,5-8]. | ☐ | ☐ | |
| 2b) Audit IUSS practices [1,8]. | ☐ | ☐ | |
| 2c) Review IUSS audit data on a quarterly basis and consider improvement activities. | ☐ | ☐ | |
| 2d) Follow appropriate preparation methods for IUSS [1,8]. | ☐ | ☐ | |

### Undergoing surgery pre-procedure

| The facility has clearly communicated to providers that they are expected to address the following: | ☐ | ☐ | |
| 3a) Pre-op planning which includes assessment of modifiable risk factors and offering education and services for risk reduction (e.g., smoking cessation, weight loss, glucose management). | ☐ | ☐ | |
| 3b) The patient’s pre-op physical is in the patient medical record and reviewed by pre-op team prior to surgery. | ☐ | ☐ | |
| 3c) The pre-op physical includes evaluation for existing infections including, but not limited to; skin, urinary tract, sinus and periodontal. | ☐ | ☐ | |
| 3d) If identified, infections are treated before elective surgery and surgery is postponed until resolution of infection (excludes emergency surgery) [1,5]. | ☐ | ☐ | |

### Prophylactic antibiotics:

<p>| 3e) An evidence-based standardized protocol is in place for the use of prophylactic antibiotics [1]. | ☐ | ☐ |</p>
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<td><strong>3f)</strong> Surgeons, pharmacy, infection prevention, infectious disease and anesthesia staff are involved in the protocol development to ensure appropriate timing, selection and duration of antibiotics.</td>
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| **3g)** Pre-printed or computerized standard orders are in place specifying antibiotic, timing, dose and discontinuation [2,11]. Instructions for re-dosing (e.g., related to duration of surgery and blood loss) or special weight considerations, especially for obese patients (body mass index >30) are included [1,12].  
  • Intra-operative re-dosing of surgical prophylactic antibiotics is to be performed for procedures that last longer than two half-lives of the drug [1,12-15].  
  • Intra-operative re-dosing of surgical prophylactic antibiotics is to be performed for procedures involving blood loss >1500cc [12,15].  
  • A weight based dosing protocol is to be implemented per American Society of Health-System Pharmacists (ASHP), the Infectious Diseases Society of America (IDSA), the Surgical Infection Society (SIS), and the Society for Healthcare Epidemiology of America (SHEA) guidelines [1,12,13,15,16]. | ☐ | ☐ |
| **3h)** Roles are clearly assigned [2] for ensuring that antibiotics are administered within one hour prior to surgical incision (two hours for vancomycin and fluoroquinolones) and for re-dosing if needed [1,12]. | ☐ | ☐ |
| **3i)** A process is in place to discuss administration timing (including re-dosing) during “time-out” period or pre-procedural briefing [1,2,11,17]. | ☐ | ☐ |
| **The facility’s pre-op patient skin preparation process includes:**  
  **3j)** Assessing the patient for allergies or sensitivities to skin preparation agents [18].  
  **3k)** Removal of any jewelry at or near the surgical site before cleaning the skin [18].  
  **3l)** Showering/bathing:  
    • Patients are to be advised to shower or bathe (full body) with either soap (antimicrobial or non-antimicrobial) [19] or an antiseptic agent, once the evening before and once the morning of the surgical procedure [1,5,18,20-22].  
    • Upon admission to the preoperative area, an FDA approved antiseptic solution is to be applied in full strength to the operative site [1,5,20,23].  
    • Adherence to instructions for preoperative antiseptic showering or bathing at home is to be assessed upon admission to the preoperative area as a part of a preoperative bundle/checklist. If a patient reports that he or she was unable, an antiseptic shower, bath or full body wipe is to be completed pre-operatively.  
    • Hospital inpatients requiring surgery are to receive an antiseptic shower, bath, or full body wipe prior to surgery whenever possible. | ☐ | ☐ |
| **The facility’s operative site preparation process includes:**  
  **3m)** The pre-op antiseptic agent selected significantly reduces microorganisms and is broad spectrum, fast-acting and has a persistent effect [18]. Consider use of 2% chlorhexidine gluconate (CHG) with isopropyl alcohol or iodine povacrylex with alcohol (70%) unless contraindicated [2,3,19,24].  
  **3n)** Wearing sterile gloves unless the antiseptic prep applicator is of sufficient length to prevent hand contamination [18].  
  **3o)** Any skin preparation containing alcohol must be allowed to dry [18]. | ☐ | ☐ |
| **Glycemic control for diabetic and non-diabetic patients:**  
| **Preoperative normothermia:**  
  **3q)** The facility has a process in place to pre-warm the patient’s body temperature to >96.8°F / 36°C during surgery [2,11,25,26]. | ☐ | ☐ |

**During the procedure**

| **OR Traffic. The facility has set clear expectation that:**  
  **4a)** The OR door is only opened for essential passage of equipment, personnel and patient during surgery [1,2,7].  
  **4b)** Responsibility is assigned to monitor the room once sterile supplies are opened. | ☐ | ☐ |
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<td>4c) An assessment of OR traffic, with the intent to reduce unnecessary traffic, is performed periodically [1,2].</td>
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**Operative normothermia. The facility has a process in place to:**

4d) Maintain the patient’s body temperature at >96.8°F / 36º C during surgery [1,2,5,11,19,20, 25,26]. | ☐ | ☐ |

4e) Measure the patient’s temperature just prior to or shortly after anesthesia has ended [26]. | ☐ | ☐ |

4f) The facility maintains perioperative glycemic control with blood glucose target levels <200mg/dL for diabetic [5] and non-diabetic patients during surgery [1,2,11,19,20, 27]. | ☐ | ☐ |

4g) The facility has a process in place to ensure antibiotic dose is repeated during surgery at the appropriate time if indicated [1,12]. | ☐ | ☐ |

**Closing Instruments/trays for class II open surgeries**

4h) For all bowel procedures, clean instruments, water, and gloves/gowns are to be utilized for wound closure [2,3,28]. | ☐ | ☐ |

4i) For all class II and higher clean/contaminated open laparotomies, including extracorporeal bowel anastomoses, clean instruments, water, and gloves/gowns are to be considered for wound closure. | ☐ | ☐ |

4j) The need for closing trays/closing instruments is to be added to the preoperative briefing or timeout script. | ☐ | ☐ |

**Post-procedure**

**Postoperative wound care. The facility sets expectations for:**

5a) Maintaining the sterility of the incision until protected. | ☐ | ☐ |

5b) Surgical sterile dressings are to be left intact 24–48 hours unless there is bleeding or a reason to suspect early infection [2,3,5]. | ☐ | ☐ |

5c) Where postoperative dressing changes are necessary, sterile gloves and dressings should be used [3,5]. | ☐ | ☐ |

5d) Hand hygiene products will be provided at the patient bedside for patients, visitors, and, health care workers [3,4]. | ☐ | ☐ |

**Postoperative normothermia:**

5e) The facility has a process in place to maintain the patient’s body temperature at >96.8 F / 36 C in the post-anesthesia care area [2,11,25,26]. | ☐ | ☐ |

**Postoperative glycemic control for diabetic and non-diabetic patients. The facility has a process in place to:**

5f) Communicate baseline and intra-op glucose during post-op hand-offs. | ☐ | ☐ |

5g) Maintain post-operative glucose level at <200 mg/dl for 72 hours post-operatively for diabetic and non-diabetic patients while an inpatient [2,11,29]. | ☐ | ☐ |

**Timely discontinuation of postoperative antibiotics**

5h) The facility has a process in place to ensure all antibiotics are discontinued within 24 hours after end of surgery unless otherwise indicated. (Exceptions: CABG and other cardiac surgery or current or suspected infection). [1,12]. | ☐ | ☐ |

**OR team accountability/communication**

6a) The facility has a process in place to conduct a pre-op briefing prior to incision that includes discussion on antibiotic, timing, need for re-dosing, need for closing tray; any special considerations and equipment/supply needs to minimize the need to bring in additional equipment/ supplies during the procedure [1,2,19]. | ☐ | ☐ |

6b) The facility clearly define “Hard Stops” (key steps that if not completed the staff do not move forward with the next process steps) e.g., patient refuses pre-operative warming, antibiotic is not given within appropriate timeframe, organizationally approved antiseptic prep is not used to prep the site. | ☐ | ☐ |
Gap Analysis Questions | Yes | No | If answered question “No” – identify the Specific Action plan(s) including persons responsible and timeline to complete.
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Health care personnel (HCP), prescribers education

7a) SSI prevention education and competencies have been incorporated into new employee orientation for all HCP and prescribers caring for surgical patients. ☐ ☐
7b) Ongoing SSI prevention education is incorporated into training at least annually for all HCP and prescribers involved in the care of surgical patients. ☐ ☐

The facility has set and enforces clear expectations for surgical attire in restricted and semi-restricted areas, including:

7c) Fresh surgical attire laundered by the hospital or healthcare-accredited laundry is donned upon arrival before entering the restricted and semi-restricted areas each day [30]. ☐ ☐
7d) Surgical attire is changed if it becomes visibly soiled [5,30]. ☐ ☐
7e) Scrubs are not to be worn outside the hospital. This applies to all HCP, prescribers and vendors [30]. ☐ ☐
7f) Personal attire worn in a restricted/semi-restricted area must be completely covered by hospital-provided attire [30]. ☐ ☐
7g) Jewelry that is not covered by surgical attire is removed prior to entering restricted and semi-restricted area [30]. ☐ ☐
7h) Scalp and hair is completely covered by disposable caps or caps that are laundered by the hospital or healthcare-accredited laundry and changed daily [30]. ☐ ☐
7i) Non-scrubbed HCP and prescribers in the OR wear hospital-laundered long sleeved cover jackets [30]. ☐ ☐
7j) The “Just Culture” model will be applied when HCP and prescribers are observed not following facility expectation for appropriate surgical attire. ☐ ☐

References


