

Preventing Surgical Site Infections

The most common preventable complication after surgery is a surgical site infection (SSI).¹ Despite the fact that antibiotics can treat most infections, SSIs are a major cause of morbidity and mortality after surgery. Approximately 3 percent of patients who contract an SSI will die as a consequence.² SSIs are also the leading cause of readmissions to the hospital following surgery.³

Surgical teams can take many preventive steps before, during, and after surgery to minimize the occurrence of SSIs. Examples include following surgical safety checklists that standardize safety assessment and improving teamwork and communication. This checklist provides a high-level overview of prevention efforts, and it presents some preoperative, intraoperative, and postoperative considerations. Healthcare facilities can use these considerations to assess and enhance their protocols and programs to promote more positive outcomes for their surgical patients.⁴

	Yes	No
<i>Preoperative Considerations</i>		
Has your facility developed policies, procedures, and protocols to prevent SSIs based on evidence-based standards from professional organizations, rules and regulations, and medical device manufacturer instructions for use?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility ensure that surgeons and perioperative personnel are educated about SSI prevention?	<input type="checkbox"/>	<input type="checkbox"/>
Are surgical patients and their families educated about their role in preventing SSIs?	<input type="checkbox"/>	<input type="checkbox"/>
Are remote infections identified and treated in surgical patients before elective procedures?	<input type="checkbox"/>	<input type="checkbox"/>
Are surgical patients advised to shower or bathe (full body) with soap (antimicrobial or nonantimicrobial) or an antiseptic agent the night before surgery?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
Preoperative Considerations (continued)		
Are patients advised to avoid shaving before surgery?	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • Is hair removal limited only to areas where it may interfere with the surgical incision? • If hair removal is necessary before surgery, are clippers used instead of a razor? • Has your facility taken all razors out of the operating room area? • Does your facility ensure an adequate supply of clippers is available? • Does your facility ensure staff are trained on the proper use of clippers? 	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility ensure that appropriate antimicrobial agents are selected based on the surgical procedure, the most common pathogens known to cause SSI for the specific procedure, and published guidelines?	<input type="checkbox"/>	<input type="checkbox"/>
Is antimicrobial prophylaxis only administered when indicated based on evidence-based standards and guidelines, and is it administered within 1 hour prior to incision to maximize tissue concentration?	<input type="checkbox"/>	<input type="checkbox"/>
Does the surgical team use alcohol-containing preoperative skin preparatory agents in combination with an antiseptic?	<input type="checkbox"/>	<input type="checkbox"/>
Do patients having cesarean section and hysterectomy procedures receive the appropriate preoperative antiseptic vaginal preparation agents, and are these agents administered before skin incision?	<input type="checkbox"/>	<input type="checkbox"/>
Do patients having elective colorectal surgical procedures receive a combination of parenteral and oral antimicrobial prophylaxis?	<input type="checkbox"/>	<input type="checkbox"/>
Are patients who are having orthopedic and cardiothoracic surgical procedures decolonized with an anti-staphylococcal agent?	<input type="checkbox"/>	<input type="checkbox"/>
Does the surgical team avoid applying topical antimicrobial agents to surgical incisions?	<input type="checkbox"/>	<input type="checkbox"/>
Are preoperative blood glucose levels reviewed on all patients to determine whether hyperglycemia exists?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
<i>Preoperative Considerations (continued)</i>		
Are all surgical instruments cleaned and sterilized properly before each use?	<input type="checkbox"/>	<input type="checkbox"/>
Is the operating room and its environment cleaned and sterilized?	<input type="checkbox"/>	<input type="checkbox"/>
Do surgeons perform a proper scrub before entering the operating room?	<input type="checkbox"/>	<input type="checkbox"/>
Does the facility ensure that surgery is not routinely delayed to provide parenteral nutrition?	<input type="checkbox"/>	<input type="checkbox"/>
<i>Intraoperative Considerations</i>		
For procedures not requiring hypothermia, does the surgical team maintain patients' body temperature at 95.9° F (35.5° C) or higher during the perioperative period?	<input type="checkbox"/>	<input type="checkbox"/>
Does the surgical team perform intraoperative antiseptic wound lavage? Are open wounds packed with sterile gauze and covered with sterile dressings?	<input type="checkbox"/>	<input type="checkbox"/>
Does the surgical team use impervious plastic wound protectors for gastrointestinal and biliary tract surgeries?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility use negative-pressure dressings in patients who may benefit as a strategy to prevent SSIs?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility use antimicrobial sutures as a strategy to prevent SSIs?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility ensure that transfusion of blood products is not withheld from surgical patients as a means to prevent SSIs?	<input type="checkbox"/>	<input type="checkbox"/>
Do all healthcare workers in the surgical area maintain adequate hand hygiene?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility ensure that operating room traffic is controlled?	<input type="checkbox"/>	<input type="checkbox"/>
Do staff members work to prevent hypothermia at all phases of the surgical process by using warmed blankets as well as warmed fluids for IVs and flushes in surgical sites and openings?	<input type="checkbox"/>	<input type="checkbox"/>
For patients with normal pulmonary function undergoing general anesthesia with endotracheal intubation, is an increased fraction of inspired oxygen administered during surgery and after extubation in the immediate postoperative period?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
<i>Intraoperative Considerations (continued)</i>		
Does the surgical team discontinue antimicrobial agents after the surgical incision is closed in the operating room, even when drains are inserted during the procedure?	<input type="checkbox"/>	<input type="checkbox"/>
<i>Postoperative Considerations</i>		
Are all patients' blood glucose levels (even those without diabetes) controlled in the immediate postoperative period? Is the target glucose level 110–150 mg/dL?	<input type="checkbox"/>	<input type="checkbox"/>
Are patients' dressings checked for drainage and closure, with the staff member maintaining proper hand hygiene and strict asepsis while doing so?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility perform SSI surveillance and provide feedback on SSI rates to surgical and perioperative staff and leadership?	<input type="checkbox"/>	<input type="checkbox"/>
Does your facility use automated data systems and electronic health records to broaden and improve SSI surveillance?	<input type="checkbox"/>	<input type="checkbox"/>

Resources

- [Agency for Healthcare Research and Quality: Surgical Site Infections](#)
- [Centers for Disease Control and Prevention: Surgical Site Infection \(SSI\)](#)
- [Infection Control & Hospital Epidemiology: Strategies to Prevent Surgical Site Infections in Acute-Care Hospitals: 2022 Update](#)
- [Institute for Healthcare Improvement: Surgical Site Infection](#)

Endnotes

¹ Agency for Healthcare Research and Quality. (2019, September 7). *Surgical site infections*. Retrieved from <https://psnet.ahrq.gov/primer/surgical-site-infections>.

² Ibid.

³ Merkow, R. P., Ju, M. H., Chung, J. W., Hall, B. L., Cohen, M. E., Williams, M. V., . . . Bilimoria, K. Y. (2015). Underlying reasons associated with hospital readmission following surgery in the United States. *JAMA*, *313*(5), 483–495. <https://doi.org/10.1001/jama.2014.18614>

⁴ This checklist is based on information from the following sources: Calderwood, M., Anderson, D., Bratzler, D., Dellinger, E., Garcia-Houchins, S., Maragakis, L., . . . Kaye, K. (2023). Strategies to prevent surgical infections in acute-care hospitals: 2022 update. *Infection Control & Hospital Epidemiology*, 1–26. doi:10.1017/ice.2023.67; Berrios-Torres, S. I., Umscheid, C. A., Bratzler, D. W., Leas, B., Stone, E. C., Kelz, R. R., . . . Schechter, W. P. (2017, May 3). Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017. *JAMA Surgery*, *152*(8), 784–791; Greene, L. R. (2015, September 10). Preventing surgical site infections. *American Nurse Today*. Retrieved from www.myamericannurse.com/preventing-surgical-site-infections; Institute for Healthcare Improvement. (2012). *How-to guide: Prevent surgical site infections*. Cambridge, MA: Author; Iowa Department of Public Health. (n.d.). *Surgical site infections*. Retrieved from <https://idph.iowa.gov/hai-prevention/information/ssi>

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