

# Surgical site infection prevention: A comprehensive approach to patient safety.

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## Introduction

Surgical site infections (SSIs) represent one of the most common and preventable complications associated with surgery. These infections can result in prolonged hospital stays, increased healthcare costs, and, in some cases, life-threatening consequences. Therefore, preventing SSIs is a critical aspect of improving patient outcomes and ensuring the safety and well-being of individuals undergoing surgery. This article explores the best practices and strategies for surgical site infection prevention. Surgical site infections occur when bacteria or other pathogens enter the body through a surgical wound. These infections can develop within 30 days of surgery or up to one year after surgery if a prosthetic implant is involved. SSIs are categorized into three main types. Involves the skin and subcutaneous tissue. [1,2].

Involves the deeper tissues like fascia and muscle. Affects the internal organs or spaces. Factors that increase the risk of SSIs include obesity, diabetes, immunosuppression, poor nutritional status, contamination during surgery, and prolonged operative times. However, many of these risk factors can be managed or minimized with appropriate preventive measures. Thorough screening before surgery helps identify patients who are at higher risk for SSIs, such as those with chronic conditions like diabetes or those who are smokers. Addressing modifiable risk factors can significantly reduce infection rates. Administering the right antibiotic at the appropriate time usually within one hour before the incision—is a cornerstone of SSI prevention. The choice of antibiotic should be guided by the type of surgery, potential pathogens, and patient allergies. [3,4].

Proper antiseptic techniques are essential for reducing the microbial load on the skin. Commonly used agents include chlorhexidine gluconate or iodine-based solutions. The surgical site should be cleaned and disinfected thoroughly before the procedure. Prolonged surgery increases the likelihood of infection. Surgeons should aim to perform surgeries as efficiently as possible without compromising patient safety. Ensuring that all surgical instruments and the operating environment are sterile is essential. This includes the use of sterile drapes, gloves, and instruments, as well as maintaining a sterile field throughout the surgery. Maintaining normothermia during surgery has been shown to reduce the risk of SSIs. Hypothermia can impair immune function and reduce tissue oxygenation, creating a more conducive

environment for bacterial growth. [5,6].

Proper dressing techniques are crucial for preventing contamination of the surgical wound. The dressing should be sterile and changed as needed, based on clinical judgment and the surgeon's instructions. Close monitoring of the surgical site for any signs of infection—such as redness, swelling, pain, or discharge—is important for early detection and treatment. Early intervention can prevent the infection from spreading and becoming more severe. While antibiotics are vital in preventing and treating SSIs, their overuse can contribute to antimicrobial resistance. Antibiotic therapy should be tailored to the specific infection and based on culture results when possible. Educating patients about the importance of hygiene and wound care after surgery is essential for preventing infections. Patients should be instructed on how to keep the surgical site clean, signs of infection to watch for, and when to seek medical attention. Additionally, lifestyle modifications such as smoking cessation and maintaining a healthy diet can improve immune function and reduce the risk of SSIs. [7,8].

The operating room (OR) should be maintained in a sterile and controlled environment. This includes proper ventilation, air filtration, and regular cleaning protocols. Surgeons, nurses, and other medical staff should undergo regular training in infection control practices, sterile techniques, and the importance of adhering to protocols designed to prevent SSIs. Hospitals and surgical centers must implement and follow evidence-based guidelines and protocols, such as those outlined by the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO), to ensure consistent and effective infection prevention practices. [9,10].

## Conclusion

Surgical site infection prevention is a multifaceted process that involves a combination of careful planning, sterile techniques, and postoperative care. By focusing on preoperative screening, antibiotic prophylaxis, meticulous surgical technique, and patient education, healthcare providers can significantly reduce the incidence of SSIs and improve patient outcomes.

## References

1. Nana AD, Joshi A, Lichtman DM. Plating of the distal radius. *J Am Acad Orthop Surg*. 2005;13(3):159-171.

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2. McKissack HM. Does insurance status affect access to care among ankle fracture patients? An institutional retrospective study. *J Foot Ankle Surg.* 2021 ;60(3):520-2.
3. Court-Brown CM. The changing epidemiology of fall-related fractures in adults. *Injury.* 2017;48(4):819-824.
4. Colman M. Prolonged operative time increases infection rate in tibial plateau fractures. *Injury.* 2013;44(2):249-52
5. Osada D, Comparison of different distal radius dorsal and volar fracture fixation plates: a biomechanical study. *J Hand Surg Am.* 2003;28(1):94-104.
6. Orbay JL, Touhami A. Current concepts in volar fixed-angle fixation of unstable distal radius fractures. *Clin Orthop Relat Res.* 2006;445:58-67.
7. Li GQ, Guo FF, Ou Y, et al. Epidemiology and outcomes of surgical site infections following orthopedic surgery. *Am J Infect Control.* 2013;41(12):1268-71.
8. Liu X, Dong Z, Li J, et al. Factors affecting the incidence of surgical site infection after geriatric hip fracture surgery: A retrospective multicenter study. *J Orthop Surg Res.* 2019;14:1-9.
9. Willis AA, Kutsumi K. 3rd. Internal fixation of dorsally displaced fractures of the distal part of the radius. A biomechanical analysis of volar plate fracture stability. *J Bone Joint Surg Am.* 2006;88(11):2411-2417.
10. Court-Brown CM, Caesar B. Epidemiology of adult fractures: A review. *Injury.* 2006;37(8):691-697.