

# Wound Care Techniques and Dressings to Reduce Surgical Site Infections: Evidence and Recommendations

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## Abstract

Surgical Site Infections (SSIs) are a significant concern in healthcare settings, contributing to patient morbidity, mortality, increased hospital stay and healthcare costs. Implementing effective wound care techniques and selecting appropriate dressings can play a crucial role in reducing the incidence of SSIs. In this article, we will explore the evidence-based recommendations for wound care techniques and dressings that have shown efficacy in reducing surgical site infections. Patients with certain risk factors are more prone to developing SSIs. These include advanced age, obesity, diabetes, smoking, immunosuppression, malnutrition and the presence of pre-existing infections. Patients may be required to undergo an antiseptic shower or receive preoperative antimicrobial agents to reduce the bacterial load on the skin. Hair removal, if necessary, should be done using clippers rather than shaving, as shaving can cause micro-cuts and increase the risk of infection.

**Keywords:** Surgical site infections • Wound care techniques • Antimicrobial agents

## Introduction

Surgical Site Infections (SSIs) are infections that occur in the area where a surgical procedure was performed. They are a common complication of surgery and can have serious consequences for patients. SSIs can range from superficial infections, affecting only the skin and subcutaneous tissue, to deeper infections involving the underlying organs or implanted devices. The most common cause of SSIs is the introduction of bacteria into the surgical wound during the procedure. Bacteria can come from the patient's skin, the surgical team, or the environment [1]. Inadequate surgical techniques, such as improper sterilization, improper wound closure, or prolonged operating time, can increase the risk of SSIs.

### Wound care techniques

**Hand hygiene:** The cornerstone of infection prevention, proper hand hygiene by healthcare professionals before and after wound dressing changes or any contact with the surgical site is imperative. It reduces the risk of introducing pathogens into the wound.

**Surgical site preparation:** Proper surgical site preparation includes thorough cleansing of the surgical area with an appropriate antiseptic solution. Antimicrobial agents such as chlorhexidine and iodine are commonly used due to their broad-spectrum activity against bacteria [2].

**Aseptic technique:** Maintaining a sterile field during wound dressing changes is essential. Healthcare professionals should adhere to strict aseptic techniques, including the use of sterile gloves, masks and gowns, minimizing the risk of contamination.

**Wound irrigation:** During the initial management of a surgical wound, irrigation with a sterile solution, such as normal saline or an antiseptic solution, helps remove debris, reduce bacterial load and promote wound healing.

**Wound closure:** Proper wound closure techniques, including the use

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of sutures, staples, or adhesive strips, should be employed to ensure optimal wound healing and minimize the risk of infection.

## Description

The dressings release antimicrobial agents, such as silver or iodine, directly onto the wound bed. They have been shown to reduce bacterial colonization and biofilm formation, lowering the risk of infection. However, their use should be reserved for high-risk patients or contaminated wounds due to the potential for antimicrobial resistance [3]. Hydrocolloid dressings create a moist wound environment, promote autolytic debridement and provide a barrier against external contaminants. They are effective in low to moderately exuding wounds and can be left in place for several days, reducing the frequency of dressing changes.

The foam dressings are highly absorbent and provide excellent exudate management. Foam dressings also offer thermal insulation and protection against mechanical trauma. They are suitable for moderate to heavily exuding wounds and can be used under compression bandages. Alginate dressings, derived from seaweed, are highly absorbent and promote hemostasis. They are particularly useful in highly exuding wounds and can be used to pack deep cavities or sinus tracts. Transparent film dressings are thin, semipermeable films that provide a waterproof barrier while allowing for wound visualization [4]. They are suitable for superficial wounds with minimal exudate and can act as a secondary dressing for other types of dressings.

### Intraoperative measures

The surgical team should perform thorough hand hygiene before and after the procedure to minimize bacterial contamination. Strict adherence to sterile techniques, including the use of sterile gloves, gowns, masks and drapes, is essential to prevent contamination [5]. Administration of appropriate antibiotics prior to incision can significantly reduce the risk of SSIs in certain procedures. Proper wound care and appropriate dressing selection play a crucial role in preventing SSIs. The wound should be assessed regularly and any signs of infection should be promptly addressed. Providing patients with information on proper wound care, signs of infection and the importance of adherence to postoperative instructions can help prevent SSIs.

## Conclusion

Reducing surgical site infections is a crucial goal in healthcare settings. Evidence-based wound care techniques, coupled with appropriate dressing selection, can significantly contribute to achieving this objective. Healthcare

professionals should emphasize meticulous hand hygiene, adhere to aseptic techniques and select dressings that promote a moist wound environment, prevent contamination and manage exudate effectively. By implementing these evidence-based recommendations, healthcare providers can reduce the incidence of surgical site infections, improve patient outcomes and enhance the overall quality of care. Surgical site infections are a significant concern in healthcare settings, impacting patient outcomes and healthcare costs. Implementing effective prevention strategies, including preoperative, intraoperative and postoperative measures, is crucial in reducing the incidence of SSIs. Healthcare professionals should emphasize the importance of adherence to sterile techniques, appropriate antibiotic prophylaxis and meticulous wound care.

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## Conflict of Interest

None.

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