

# Surgical Site Infections



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## KEYWORDS

- Surgical site infections (SSIs) • Risk factors • Wound management
- Antibiotic prophylaxis • Hospital acquired infections
- Hospitalist comanagement of surgical patients

## HOSPITAL MEDICINE CLINICS CHECKLIST

1. Surgical site infection (SSI) is a serious postoperative complication that contributes to increased morbidity, mortality, and health care cost.
2. SSIs are a result of a complex interplay between patient-related, procedure-related, and microbe-related factors. Many infections are potentially preventable if modifiable risk factors are addressed in the perioperative period.
3. Prevention requires a multidisciplinary approach between surgical and anesthesia teams as well as effective hospitalist comanagement and communication.
4. Effective antibiotic prophylaxis is the cornerstone of prevention and requires appropriate antibiotic selection, dose, timing, and duration.
5. SSIs are treated with incision and drainage and debridement of necrotic tissue if necessary. Antibiotics are only warranted if systemic signs of infection are present.

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Disclosures: Dr E.P. Dellinger has worked in the area of clinical trials with industry sponsorship since 1973. During the past 2 years he has received grants for clinical research from, served on an advisory board for, and/or lectured for honoraria from, Merck, Baxter, Ortho-McNeil, Targanta, Schering-Plough, Astellas, Care Fusion, Durata, Pfizer, Applied Medical, Rib-X, Affinium, Tetrphase, R-Pharm, Cubist, and 3M. He is not a member of any speakers bureaus, has not received any company-provided speaker's training, and never uses any company-provided slides or other visual materials.

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## DEFINITIONS

### *How are surgical site infections (SSIs) defined and classified?*

SSIs are defined as infections that occur within 30 days of surgery or within 1 year if a surgical implant is involved.<sup>1</sup> They are classified as superficial, deep, or organ-space SSIs depending on the extent of wound involvement and depth of infection (**Table 1**).<sup>1</sup>

## BACKGROUND/EPIDEMIOLOGY

### *What is the incidence and impact of SSIs on morbidity, mortality, and health care expenditures?*

SSIs are the most common health care–associated infections among operative patients, developing in 2% to 5% of patients.<sup>2,3</sup> National surveillance programs and best-practice guidelines have helped reduce the incidence of such infections.<sup>4–6</sup> Nonetheless, preventable SSIs remain a significant problem and are associated with increased morbidity, mortality, and health care expenditures (**Box 1**).<sup>2,3,5,7–10</sup> Awareness of the general principles of wound management, SSI prevention, and treatment

**Table 1**  
US Centers for Disease Control and Prevention SSI classification

Superficial SSI	Involves only the skin or subcutaneous tissue surrounding the incision and meets one of the following criteria: <ul style="list-style-type: none"> <li>• Purulent drainage from the incision</li> <li>• Organism isolated from wound tissue or fluid culture</li> <li>• Have one of the following signs/symptoms and not culture negative               <ul style="list-style-type: none"> <li>◦ Pain or tenderness</li> <li>◦ Localized swelling</li> <li>◦ Erythema or warmth</li> </ul> </li> <li>• Diagnosis of an SSI by a surgeon or attending physician</li> </ul>
Deep SSI	Involves deep soft tissues, such as fascia and/or musculature, and is related to the surgical procedure and meets one of the following criteria: <ul style="list-style-type: none"> <li>• Purulent drainage from the incision but not organ space</li> <li>• Spontaneous wound dehiscence or intentional opening in the setting of fever or localized pain and tenderness; not culture negative</li> <li>• Abscess or other signs of infection on examination or radiographic evaluation</li> <li>• Diagnosis of an SSI by a surgeon or attending physician</li> </ul>
Organ-space SSI	Involves any part of the body that is opened during the procedure, excluding skin and deeper soft tissue structures, and meets one of the following criteria: <ul style="list-style-type: none"> <li>• Purulent drainage from a drain placed in the organ/space</li> <li>• Organism isolated from organ/space fluid or tissue culture</li> <li>• Abscess or other signs infection on examination or radiographic evaluation</li> <li>• Diagnosis of an SSI by a surgeon or attending physician</li> </ul>

Data from Horan TC, Gaynes RP, Martone WJ, et al. CDC definitions of nosocomial surgical site infections, 1992: a modification of CDC definitions of surgical wound infections. *Infect Control Hosp Epidemiol* 1992;13(10):606–8; and Surgical site infection (SSI) event. 2015. Available at: <http://www.cdc.gov/nhsn/PDFs/pscManual/9pscSSICurrent.pdf>. Accessed June 18, 2015.

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