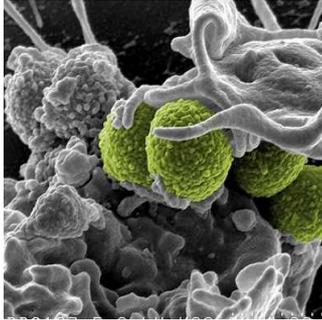


Bundled Intervention Reduces Surgical Site Infections



A multicentre study published in *JAMA* shows that implementation of a multifaceted intervention can be effective in reducing surgical site infections (SSIs) caused by *Staphylococcus aureus* bacteria.

Twenty hospitals in nine U.S. states participated in this study. Loreen A. Herwaldt, MD, of the University of Iowa Carver College of Medicine, Iowa City, and colleagues examined whether the implementation of an evidence-based bundle is associated with a lower risk of *S aureus* SSIs in patients undergoing cardiac operations or hip or knee replacement or reconstruction. Rates of SSIs were collected for a median of 39 months during the pre-intervention period and a median of 21 months during the intervention period.

The following interventions were implemented:

- Patients whose preoperative nasal screens were positive for methicillin-resistant *S aureus* (MRSA) or methicillin-susceptible *S aureus* (MSSA): applying the antibiotic mupirocin intranasally twice daily for up to five days and daily bathing with chlorhexidine-gluconate (CHG) for up to five days before their operations.
- MRSA carriers received the antibiotics vancomycin and cefazolin or cefuroxime for perioperative prophylaxis; all others received cefazolin or cefuroxime.
- Patients who were MRSA-negative and MSSA-negative bathed with CHG the night before and morning of their operations.
- Patients were treated as MRSA-positive if screening results were unknown.

After a three-month phase-in period, bundle adherence remained constant at 83 percent (full adherence, 39 percent; partial adherence, 44 percent). The complex (deep incisional or organ space) *S aureus* SSI rates decreased significantly among patients in the fully adherent group compared with the pre-intervention period; notably, rates did not decrease significantly in the partially adherent or nonadherent group.

Overall, 101 complex *S aureus* SSIs occurred after 28,218 operations during the pre-intervention period and 29 occurred after 14,316 operations during the intervention period (average rate per 10,000 operations, 36 for pre-intervention period vs. 21 for intervention period). Researchers found that the rates of complex *S aureus* SSIs decreased for hip or knee arthroplasties (difference per 10,000 operations, -17) and for cardiac operations (difference per 10,000 operations, -6).

"Even though the baseline rate of complex *S aureus* SSI was low (0.36 per 10,000 operations), the full adherence rate was only 39 percent, and hospitals had implemented some bundle elements before the study began, rates of complex *S aureus* SSIs decreased significantly," the researchers write in the *JAMA* report.

"Given that approximately 400,000 cardiac operations and one million total joint arthroplasties are performed in the United States each year, numerous *S aureus* SSIs, which can have catastrophic consequences, may be preventable," Dr. Herwaldt et al. point out. "Moreover, one SSI adds from \$13,000 to \$100,000 to the cost of healthcare. Thus, implementation of this bundle might reduce patient morbidity and the costs of care substantially."

In an accompanying editorial, Preeti N. Malani, MD, MSJ, of the University of Michigan Health System, Ann Arbor, and Associate Editor, *JAMA*, notes that this study is a noteworthy addition to a growing body of high-quality infection prevention trials, but many questions remain.

"Although *S aureus* remains the principal pathogen in terms of prevalence and associated morbidity, many other organisms also cause SSIs. As such, decolonisation of MSSA and MRSA can be only one aspect of SSI prevention. Although the current findings demonstrate a decrease in *S aureus* SSIs, the authors did not find a decrease in gram-negative SSIs or complex SSIs caused by any pathogen. This finding might reflect the overall low rate of infection, but also is a poignant reminder that additional strategies are still needed."

Source: [JAMA](#)

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