

# Practice Changes Leading to Reduced Superficial Surgical Site Infection Rates Following Cardiothoracic Surgery

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## OVERVIEW

Surgical Site Infections (SSIs) continue to be a leading cause of Healthcare Associated Infections (HAIs). The South Texas Veterans Health Care System had seen consistently high rates of superficial SSIs in patients undergoing cardiothoracic surgery. The key to lowering SSI rates is to reduce the risk factors which contribute to SSIs. The measures implemented to reduce risk include:

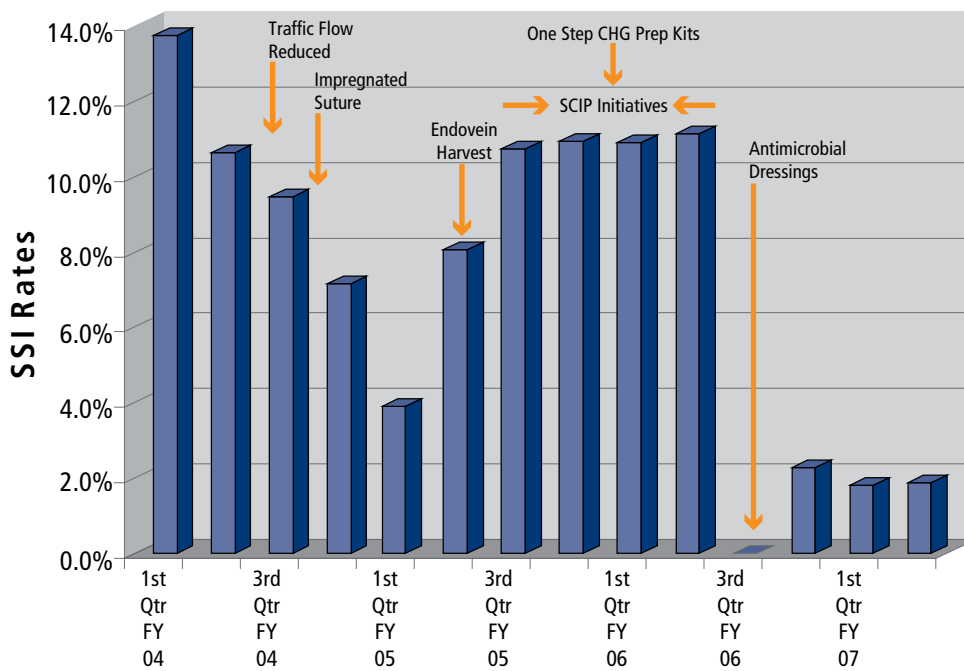
- Reducing traffic flow in and out of the operating room.
- Encouraging the use of surgical hand scrubs which have a persistent affect.
- Providing patients with chlorhexidine based soap for pre-op showers.
- Providing antimicrobial impregnated suture for skin closure.
- Decreasing the incision size on the donor site through endo-vein harvesting.
- Making FDA approved “one-step” skin preps with persistent affects available.
- Implementing evidence based practices from the Surgical Care Improvement Project (SCIP), these include:
  - Appropriate timing of prophylactic antibiotics.
  - Correct prophylactic antibiotic given.
  - Timely discontinuation of the antibiotic.
  - Controlled serum glucose control.
  - Appropriate hair removal.
  - Patient temperature control.
- Change surgical dressings to a 0.2% polyhexamethylene biguanide impregnated antimicrobial wound dressing.

## FINANCIAL IMPLICATIONS

The costs associated with SSIs range from \$1,783 to \$134,604 with a mean cost of \$25,546 per SSI (Stone PW, Braccia D, Larson E. Systemic Review of Economic Analysis of HealthCare-associated Infections. AM J Infect Control 2005; 33: 501-9). The evaluation of the cost to our facility was based on a conservative estimate assigning an average cost of 50% of the mean cost to each superficial wound infection.

- The assigned cost of a single SSI was \$12,773
- From the 1st quarter of FY 04 through the 2nd quarter FY 06, the SSI rate was 9.47%
- Based on these figures, the annualized expense of SSIs in Cardiothoracic (CT) surgery was \$273,370
- This averages out to an additional cost of \$1,210 for each CT surgical procedure
- From the 3rd quarter of FY 06 through the 2nd quarter FY 07, the SSI rate was 1.46%
- With an SSI rate of 1.46%, the annualized expense was \$42,145
- The average cost added to each surgery during this period, including the added cost of \$12.85 for the antimicrobial impregnated dressing was \$199
- The reduced SSI rate equates to a savings of \$1,011 per CT surgery

## TIMELINE FOR PRACTICE CHANGES



## SUMMARY

Based on the timeline of interventions used to decrease SSIs, there is strong evidence to suggest the introduction of the polyhexamethylene biguanide impregnated antimicrobial dressing had a major impact in the reduction of our SSI rate. Our facility had a greater than three year history of superficial SSI rates in CT surgery averaging over 10%. Concurrent with the introduction of the antimicrobial dressing, SSI rates fell below 2% and have stayed at that level for well over a year.

Since it is often not possible to identify any single case of SSIs, interventions should be focused on reducing risk. Evidence-based practices such as those in the SCIP initiative should be implemented regardless of current infection rates. Other practices with a sound theoretical basis should also be adopted and their effectiveness evaluated.



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