

A Reduction in Craniotomy Surgical Site Infections at an Academic Teaching Facility

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Background

Surgical site infections (SSI) account for 31% of all hospital acquired infections (HAI). Surgical site infections due to craniotomies are associated with significant patient morbidity, as they often require surgical intervention and prolonged antibiotics. The unadjusted observed number of Craniotomy (CRAN) infections for our facility in calendar year (CY) 2011 was almost twice the expected number according to National Healthcare Safety Network (NHSN) benchmarks.

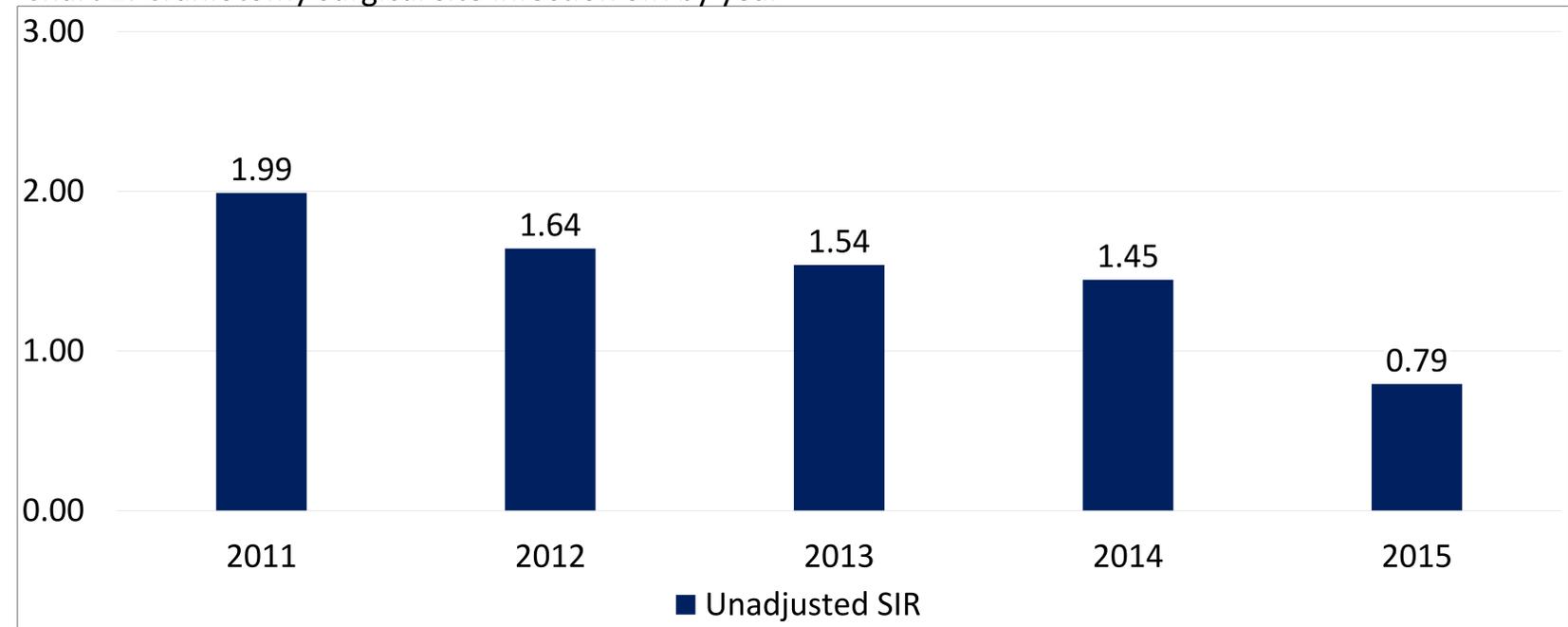
Methods

SSI surveillance was conducted for 100% of CRAN procedures according to NHSN definitions. Denominators were identified via a monthly report distributed by the Operating Room (OR) and were subjected to surveillance by a certified Infection Preventionist. Identified events were validated by the Hospital Epidemiologist. All events and associated microbiology were reviewed for trends in infection criteria which prompted focused attention on pre-operative disinfection and post-operative wound care. The Infection Prevention team partnered with the Neurosurgery (NUS) department to assess current standards of care and conduct OR observations. Interventions included the addition of Chlorhexidine Gluconate shampoo pre-operatively, increased area of pre-operative hair removal, coverage of incision with post-operative dressing beyond 24 hours, patient education on hand hygiene before dressing removal, and improved post-operative wound hygiene.

Results

The standardized infection ratio (SIR) for CRAN SSI in CY11 was 1.99. The bacteriology of these infections were primarily skin flora, specifically *Propionibacterium acnes* and coagulase-negative Staphylococci. After implementation of the wound management interventions a decrease in infections was noted and the SIR for CY15 was 0.79.

Chart 1: Craniotomy surgical site infection SIR by year



Conclusion

After clinical and epidemiologic review of CRAN SSI events we determined the most likely cause of our infections to be related to the surgical wound preparation and post-operative care. After implementation of a customized set of wound management interventions, a decrease was observed and sustained for two years. The success of these interventions highlights the importance of hair removal and wound care, as well as the need for a multidisciplinary assessment and multi-factorial approach to reduce CRAN SSI's.