

Tackling MRSA: An Orthopedic Infection Prevention Bundle

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ISSUE

Background

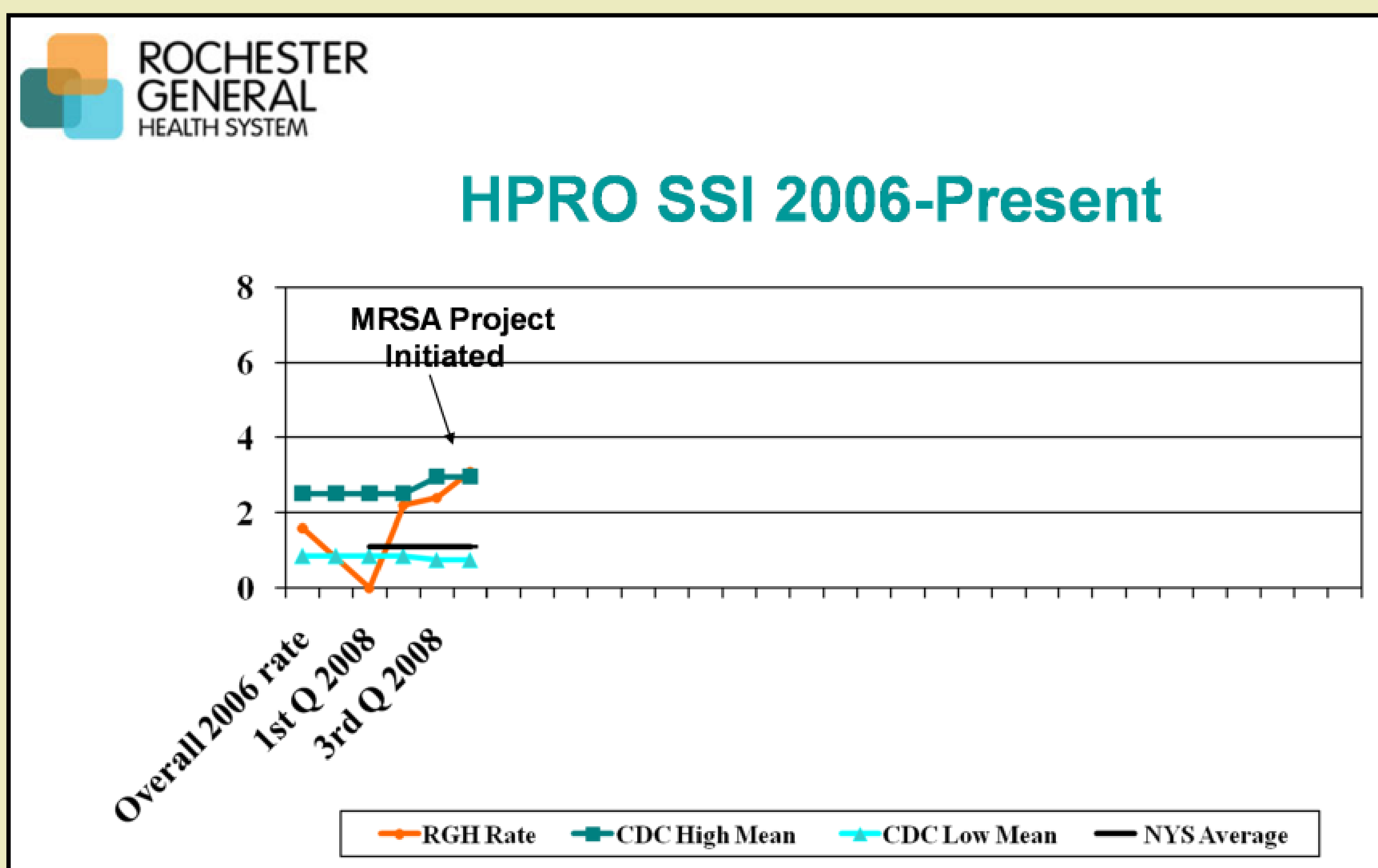
Infection of a joint prosthesis often requires removal of the infected hardware and prolonged intravenous antimicrobial therapy. MRSA infections are more difficult to treat because of limited antibiotic choices. The additional cost of one case of post-operative MRSA in the orthopedic patient can be in excess of \$50,000.

Rochester General Hospital (RGH) had a recorded 0.4% MRSA infection rate for Knee Arthroplasty patients and a 1.2% MRSA infection rate for Hip Arthroplasty patients in 2008.

- 2008 MRSA infection rate for all orthopedic surgery was 50%.
- Since 2006, >50% of the Arthroplasty infections have been MRSA.

In 2009, New York State started public reporting of all health care acquired Arthroplasty hip infection rates. RGH was found to be well above state average:

- RGH: 2.6 per 100 cases
- NYS: 1.1 per 100 cases



PROJECT

MRSA Screening

- 100% of all Orthopedic patients are nasally cultured for MRSA colonization prior to or upon admission to the Orthopedic Service.
- Colonized patients are placed on Contact Isolation to prevent transmission.
- All patients are nasally cultured for MRSA on discharge day if not done in the last 24 hrs.

Decolonization

Mupirocin

- 100% of all orthopedic patients receive Mupirocin nasally twice a day for five days or until discharge.
- Mupirocin is given to ALL patients regardless of MRSA status.
- All orthopedic cases will receive their first dose of Mupirocin nasally in the Day of Surgery Unit the day of surgery.
- Mupirocin is applied to the drain site in the OR at the end of the case, before the dressing is applied.

Chlorhexidine

- Chlorhexidine skin wipes applied to surgical area the night before and morning of surgery.
- Chloraprep implemented as standard surgical prep.

Surgical Prophylaxis

- Add 1 gm Vancomycin to Pre-op Antibiotic Prophylaxis on any patient infected or colonized with MRSA in addition to Cefazolin 1-2 gm if indicated for the procedure (weight based dosing for pediatric patients).
- If Vancomycin pre-operatively is missed, a one time Vancomycin dose of 1gm (weight based for pediatrics) is recommended to be given within 24hrs after surgery (Per Infectious Disease Recommendation).

Environmental

- Disinfectant wipes placed in all rooms and on all portable equipment.
- Instituted all patient dedicated equipment.
- Evaluate patient placement to segregate orthopedic patients separate from medical patients.

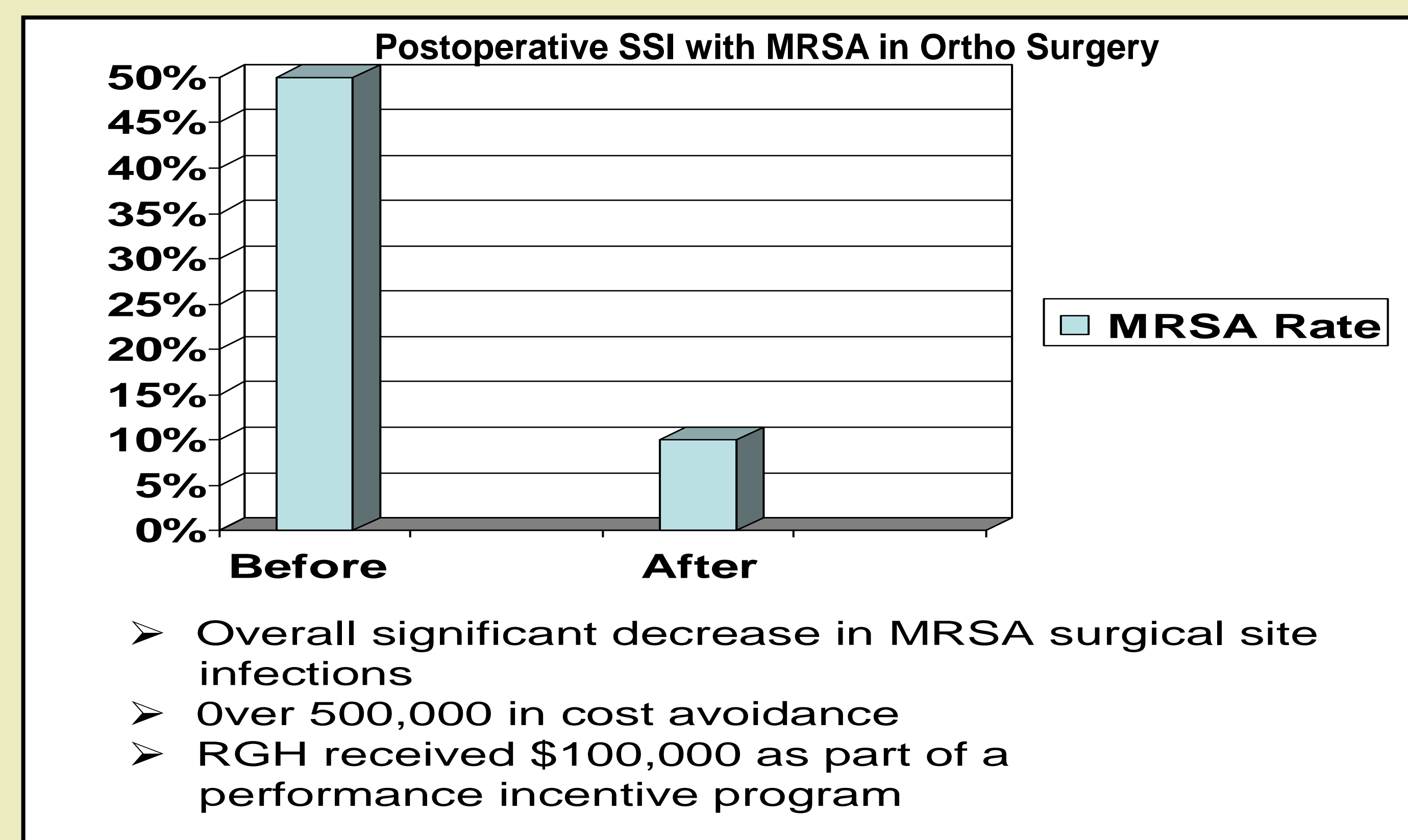
RESULTS

Clinical Results

The institution of a Comprehensive MRSA SSI Prevention Bundle showed a significant decrease in the MRSA SSI infection rate along with a 50% reduction in all Orthopedic SSI's.

- Mupirocin Compliance: **93%**
- MRSA SWAB Compliance: **94%**
- Admitted Orthopedic MRSA Rate: **4%**

Measure	2008	2009	2010
Overall % of Orthopedic MRSA infections	50%	31% 2 since implementation	10% 1 infection
Knee Arthroplasty MRSA Infx Rate	0.4%	0%	0
Hip Arthroplasty MRSA Infx Rate	1.2%	0.5% *** None since implementation	0.2%



- Overall significant decrease in MRSA surgical site infections
- Over 500,000 in cost avoidance
- RGH received \$100,000 as part of a performance incentive program

Lesson Learned:

This project required extensive teamwork and collaboration using a multidisciplinary approach. Quality Improvement, Patient Safety and Infection Prevention begins at the bedside and interdisciplinary collaboration is essential. Processes "Hardwired" into everyday standard of care can drive change and patient outcomes.