

Rutland Regional Medical Center Hospital Quality Improvement Projects

Project Name: Perioperative Eradication of Staph aureus

Project Aim: To eradicate perioperative colonization with Staph aureus in order to reduce the risk of surgical site infections for patients undergoing elective total joint procedures.

Time Frame: May 2009 - ongoing

Background:

Surgical site infections (SSI) are an infrequent but serious complication of total joint arthroplasty with rates around 1.5 %. Orthopaedic surgical site infections cause substantial morbidity, prolong hospital stay, lead to readmission and increase healthcare costs. Carriers of Staph aureus are two to nine times more likely to acquire Staph aureus surgical site infections than non carriers. Thus, interventions designed to eradicate nasal carriage preoperatively will decrease surgical site infections.

Description:

In 2009, RRMC and Vermont Orthopaedic Clinic implemented a program to eradicate Staph aureus colonization in patients undergoing elective total joint procedures (hips, knees and shoulders) as well as certain spine procedures. This was the first eradication program of its kind in the State of Vermont. The process is managed during the perioperative period by the surgeon, pre-op nurses and infection control.

The methods used are adapted from New England Baptist Hospital (NEBH) in Boston who performs over 6000 orthopaedic procedures each year. Following implementation, NEBH reported 78% eradication of MRSA prior to surgery and demonstrated a 50% reduction in surgical site infections due to Staph aureus.

The method we use includes preoperative identification of staph aureus and MRSA by nasal swab and culture. Patients with Methicillin Sensitive Staph aureus (MSSA) carriage receive a five day treatment course of Mupirocin and standard preoperative prophylaxis. Patients with Methicillin Resistant Staph aureus (MRSA) carriage receive a five day treatment course of mupirocin and preoperative prophylaxis with Vancomycin or an agent with activity against MRSA. All patients are instructed to bath once a day for 5 days prior to surgery with chlorhexidine.

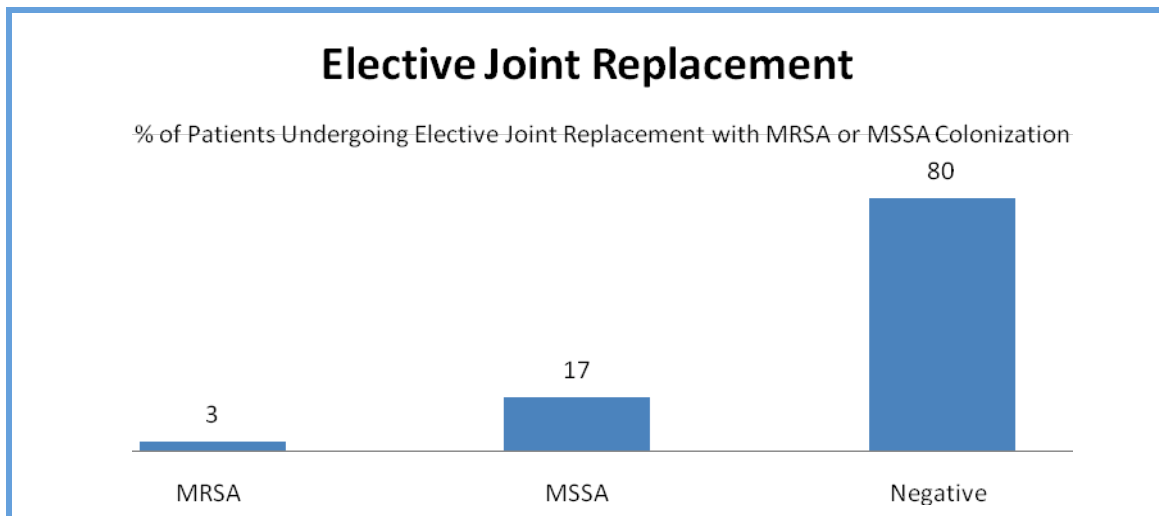
The surgical site infection rate for orthopaedic clean cases at Rutland Regional Medical Center is low. On average, our clean case infection rate is 0.6% which is lower than the 1-2% comparative rate. This project is part of our commitment to work toward zero infections.

Measures:

- % of Patients Undergoing Elective Joint Replacement with MRSA colonization
- % of Patients Undergoing Elective Joint Replacement with MSSA colonization
- % of Preoperative eradication of MRSA colonization
- Orthopaedic Clean Case Surgical Site infection rate

Results:

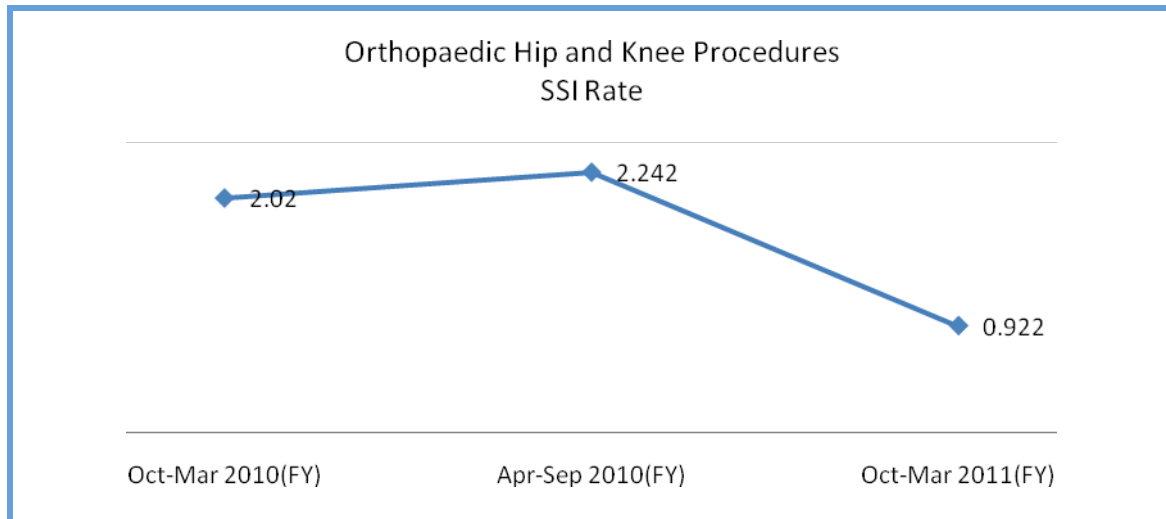
To date we have screened 558 patients. Three percent of patients screened were colonized with MRSA and eighteen percent were colonized with MSSA. Perioperative MRSA eradication was successful in all (16) patients. All patients are monitored for surgical site infections for one year post implant.



% of Preoperative eradication of MRSA

	Number of Patients	% of Patients
MRSA positive	16	3%
Total Patients	558	
Pre-operative MRSA Eradicated*	16	100%

*Two patients were not available for re-testing.



Conclusions: A small percentage of patients scheduled for total hip and knee procedures were identified through pre-operative screening to be colonized with MRSA. All patients treated according to the protocol were negative for MRSA at the time of surgery. Of the patients identified with MRSA colonization, no patients developed MRSA surgical site infections. Over the course of review, the number of patients with surgical site infections through March has decreased. This study is limited due to small sample size. This study does not take into account other measures that were concurrently implemented to reduce infections.

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Reference:

Maureen Spencer, RN, MEd, CIC, Diane Gulczynski, RN, MS, CNOR, Susan Davidson, MD, John Richmond, MD, New England Baptist Hospital, Boston, Mass. Abstract 118 "Eradication of Methicillin Sensitive Staphylococcus aureus and Methicillin Resistant Staphylococcus aureus Before Orthopedic Surgery." 18th Annual Scientific Meeting of the Society for Healthcare Epidemiology of America (SHEA), April 5-8, 2008.

Nalini Rao MD, FACP, PSHEA, Barbara Cannella RN, Lawrence S. Crossett MD, A.J. Yates Jr MD, Richard McGough III MD. "A Preoperative Decolonization Protocol for Staphylococcus aureus Prevents Orthopaedic Infections." Clin Orthop Relat Res (2008): 1343-1348.

