

Disclosures: Nozin® Nasal Sanitizer® was provided free of charge from the manufacturer for the duration of the study. An unrestricted research grant in support of this project was provided by Global Life Technologies.

Introduction

- Colonization of the nares is a modifiable risk factor for surgical site infection (SSI) following total joint arthroplasty
- Decolonization of the nares has led to decreased rates of surgical site infections
- Published decolonization protocols utilize antibiotics in the preoperative setting only and do not prevent recolonization or de novo colonization in the postoperative setting
- Widespread application of topical antibiotic preparations (mupirocin) has been associated with the emergence of bacterial resistance

Purpose

To evaluate the clinical utility of a non-antibiotic, alcohol based nasal decolonization agent administered preoperatively and postoperatively in decreasing rates of surgical site infections following total joint arthroplasty

Methods

- IRB approved prospective study
- Elective arthroplasty patients underwent nasal sanitization using an alcohol based agent.
 - Patients undergoing non-elective procedures, or those presenting through the emergency department were excluded from analysis
- Nozin® Nasal Sanitizer® was applied using a cotton tipped applicator to the nares once in the preoperative setting and three times daily for two weeks after surgery.
- Primary outcome measure was surgical site infection as defined by NHSN (National Healthcare Safety Network) reporting criteria in the first 90 days
- Results were compared to historical controls prior to decolonization protocols at our institution
- Compliance was tracked using a patient tracking card
- Statistical analysis was performed using z-test analysis to determine differences in infection reduction rates. Significance was set at $p < 0.05$.
- *A-priori* power analysis determined that 259 patients were needed to achieve 80% power with an effect size of an 80% reduction in infection

Results

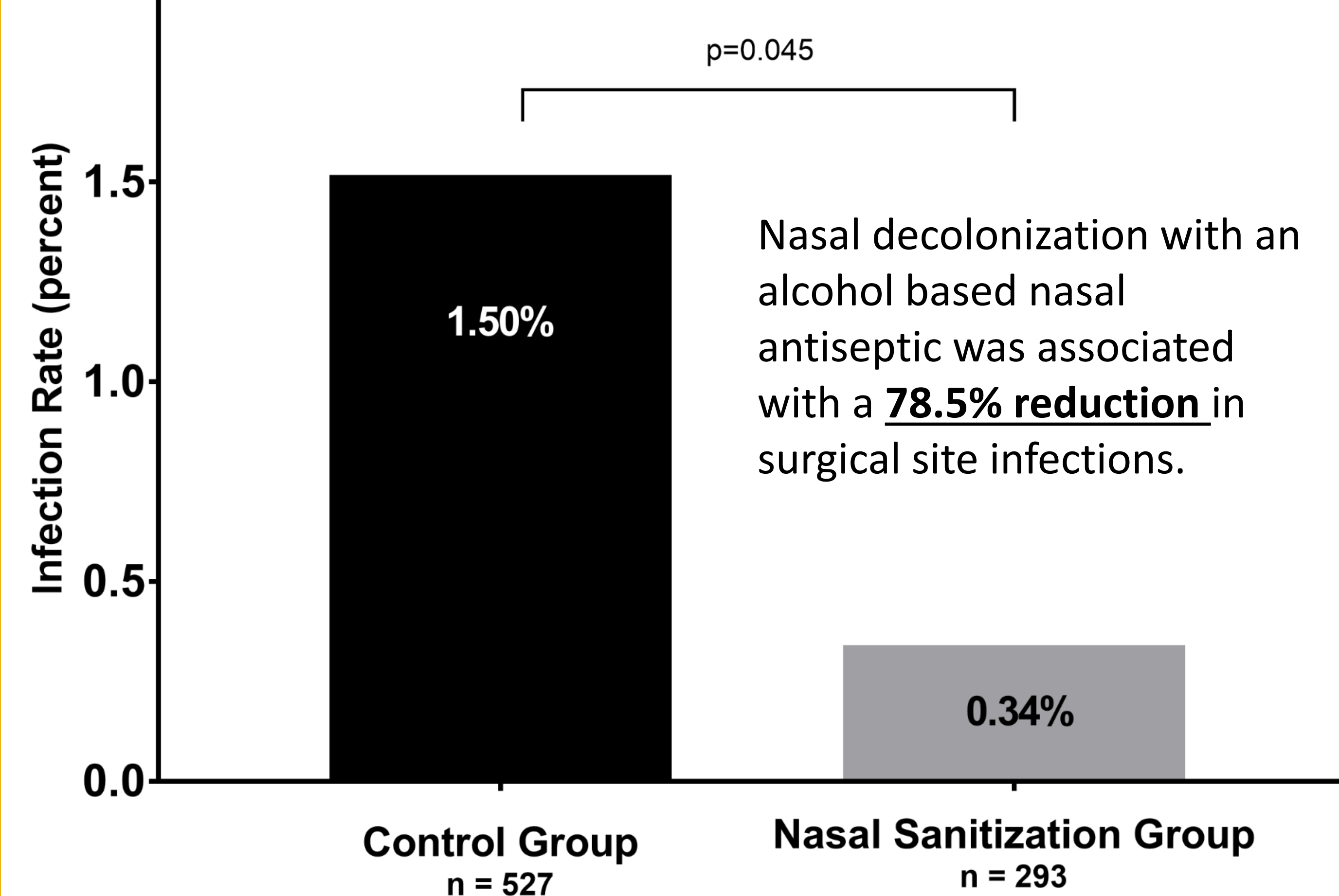
- 293 patients met inclusion criteria for the experimental arm, and 527 were included in the historical control arm
- No significant differences in demographics were identified
- Decolonization with the alcohol based antiseptic was associated with a 78.5% reduction in surgical site infection (1/293 vs 7/527, $p = 0.045$, odds ratio = 4.5)
- Patients took a mean of 32.4 doses of the prescribed 42

DEMOGRAPHIC DATA

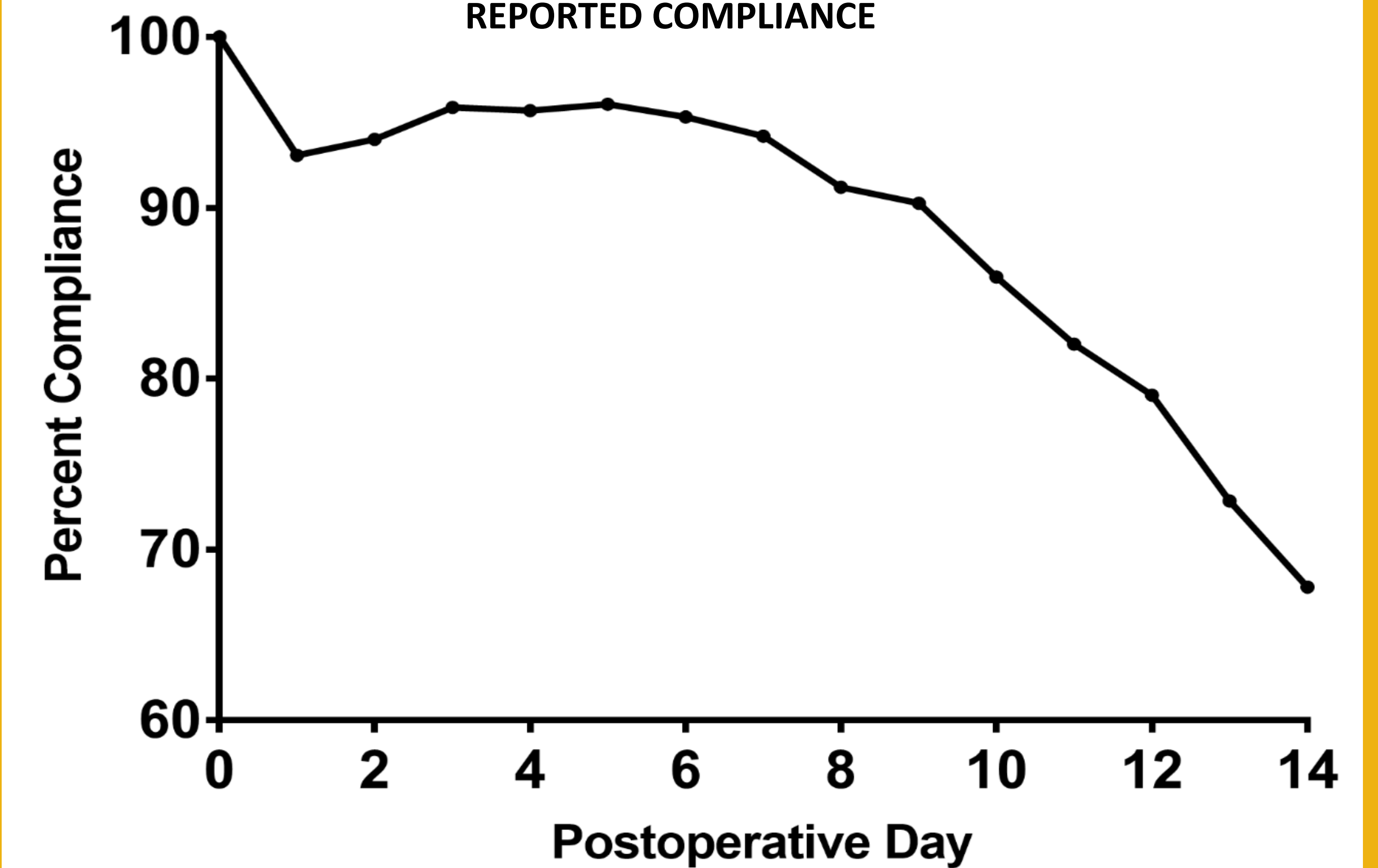
	Historical Control	Alcohol Nasal Sanitization	P-value
Age	62.1 years (range 19-93)	63.4 years (range 25-90)	0.13
Gender			
Male	47.3% (249/527)	48.1% (141/293)	0.94
Female	52.7% (278/527)	58.9% (152/293)	
Type of Procedure			
Primary	79.1% (417/527)	85.0% (249/293)	0.09
Revision	20.9% (110/527)	15.0% (44/293)	
Location of Procedure			
Hip	50.9% (278/527)	48.8% (143/293)	0.66
Knee	49.1% (259/527)	51.2% (150/293)	

Demographic data of the historical control group and the alcohol nasal sanitization. No significant differences are noted.

SURGICAL SITE INFECTION RATE



REPORTED COMPLIANCE



Adherence to the prescribed protocol diminished with time. Patients took a mean of 32.4 doses of the required 42.

Discussion

- Nasal decolonization with an alcohol based sanitizer during the perioperative period was associated with a **78.5% reduction in surgical site infections** ($p = 0.045$)
- **Compliance was greater than 75%** throughout the course of prolonged treatment
- Utilization of an alcohol based product for nasal decolonization results in reduction of bacterial carriage without fear of emerging antibiotic resistance
- Reduction of SSI observed in this study is comparable to or greater than those reported with the use of preoperative povidone-iodine or mupirocin
- SSI reduction observed in this study is similar to that reported by Mullen et al. in the spine literature

Conclusion

This low cost intervention with high compliance rate significantly reduced our infection rate when first introduced to our hospital system. Future studies examining changes in resistance patterns and cost benefits should continue to be explored.