



JOHNS HOPKINS  
NURSING

# The Use of an Alcohol-based Nasal Antiseptic in Reducing Surgical Site Infections in Patients Undergoing Elective High-Risk Procedures

Vicki Yfantis, MSN, RN, ANP-BC, CPAN, CAPA; Alyssa Kubischta, PharmD; Dr. S. Sonia Qasba, MD, MPH; Kris Kepner, BSN, RN, CNOR; Carolyn Manalo, BSN, RN, CAPA; Carol Harris, BSN, RN, CNOR  
PERIOPERATIVE SERVICES DEPARTMENT SUBURBAN HOSPITAL, BETHESDA, MARYLAND

## Background

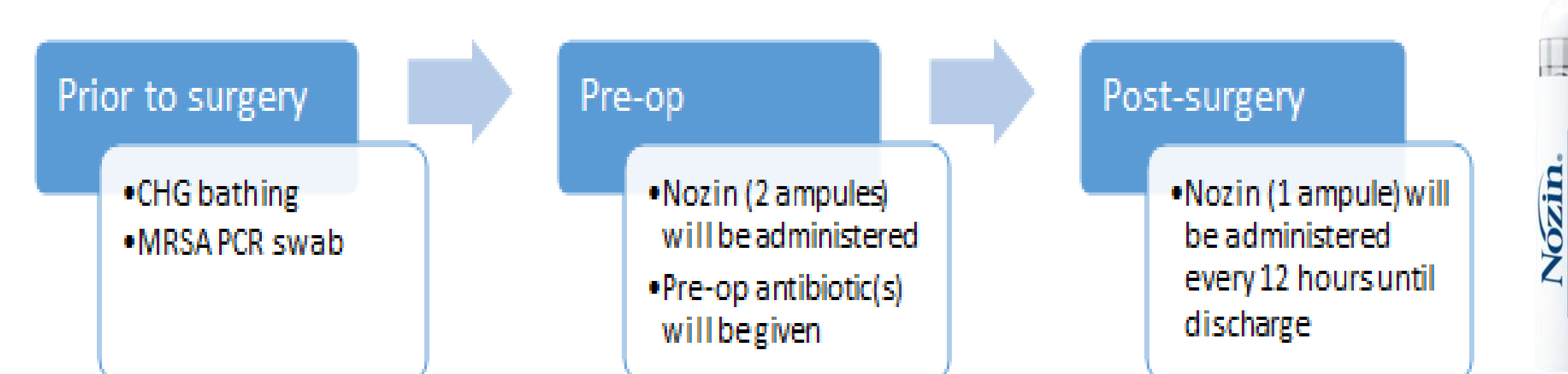
Associated with increased morbidity and mortality, surgical site infections (SSIs) create a financial burden and negatively affect patient outcomes. CDC evidence-based guidelines recommend that patients undergoing high-risk procedures use CHG and an intranasal antibiotic/antiseptic prior to surgery for SSI prevention.

## Aim of the Project

To ensure that patients scheduled for total joint arthroplasty of the knee, hip, and/or shoulder and procedures involving the spine, receive consistent nasal decolonization pre-operatively and post-operatively with a primary goal of reducing SSI rate and a secondary goal of improving pre-operative nasal decolonization compliance.

## Description of the Intervention

Using the Plan-Do-Study-Act (PDSA) model for quality improvement, an implementation plan and protocol, including the creation of a Non-Prescriber Initiated Order (NIPO), for piloting the use of the alcohol-based nasal sanitizer, Nozin® in patients undergoing elective high-risk surgeries was developed and disseminated.



## Description of Data Collection and Analysis

- Pre-operative and post-operative Nozin® administration data was collected from EPIC (MAR) from 12/1/2021 to 06/01/2022 during a 6-month pilot to analyze monthly nurse administration compliance.
- SSI rates were reviewed during the pilot time frame and for 3 months post-intervention.
- Nurse satisfaction survey to garner ease of use with Nozin® was conducted at the midway point.



- **Reduced reliance on patient compliance (day of surgery decolonization)**
- **Alcohol-based does not promote antibiotic resistance**
- **Activity against gram-positive and gram negative bacteria**
- **Low cost**
- **Well-tolerated and easy to use**

## Outcomes Measures or Results

- From 12/2020—06/2021 there were 4 SSIs reported in patients who underwent scheduled elective total joint arthroplasty and/or surgery of the spine.
- From 12/2021--06/2022 (intervention period) there were 2 SSI's reported in patients who underwent scheduled elective total joint arthroplasty and/or surgery of the spine.
- **50% reduction of SSI seen after the implementation of Nozin® in the elective high-risk surgery population.**
- Pre-operative administration compliance averaged 97%.
- Post-operative administration compliance averaged 85%.
- 95% of nurses report overall satisfaction with how easy it is to use Nozin®
- No reported side effects or patient complaints.

## Implications for Practice

- The positive effects on SSI rates and administration compliance has led the organization to add preoperative nasal sanitizer to other high-risk surgical populations, including cardiac surgery and colon surgery.
- The results of the project have inspired the ICU to implement their own pilot of nasal sanitizer for reduction of CLABSI and MRSA.
- There is a potential to add nasal sanitizer as a pre-operative protocol for all surgeries.
- There is potential for eliminating the need for pre-operative screening.
- Nurse-driven intervention that engages and involves the patient in SSI prevention.

## Lessons Learned

Utilizing a NIPO and adding nasal sanitizer to the MAR was key to successful nurse administration compliance.

## References

	Intervention		Outcome	Existing CHG	Products replaced	Costs Averted
	Pre-op	Post-op				
Cernich C. Am J Infect Control. 2020.	✓	✓	59% reduction in all cause surgical site infections (SSI) for all procedures when added alcohol-based nasal antiseptic preoperatively in addition to existing chlorhexidine bathing		Povidone iodine	\$457K
Ghaas S. Open Forum Infect Dis. 2020.	✓	✓	63% reduction in all-cause SSI for all types of surgical procedures when replaced povidone iodine nasal antiseptic with alcohol-based nasal antiseptic *Or staff was encouraged to use (it was not mandatory and compliance was not tracked)		Povidone iodine	\$598K
Landis-Bogus K and Belani A. Am. J. Infect. Control. 2019.	✓	✓	51% reduction in Staph aureus SSI when replaced pre-operative povidone iodine with pre- and post-operative alcohol-based antiseptic		Pre-operative povidone iodine	
Franklin S. Am. J. Infect. Control. 2020.	✓	✓	100% reduction in total hip and total knee surgical site infections (SSI) when nasal decolonization was added to existing body decolonization protocol (CHG bathing)			\$400K
Bostian P et. Al. Poster presented at AAOS Annual Conference. 2018.	✓	✓	79% reduction in total joint arthroplasty SSI with comprehensive nasal decolonization protocol using alcohol-based nasal antiseptic			
Stegmeier H. Op forum Infect. Dis. 2019.	✓	✓	98% reduction in total hip SSI when switching from screening and decolonizing with mupirocin to pre- and post-operative decolonization with alcohol-based nasal antiseptic		Mupirocin	
Mullen A et al. Am. J. Infect. Control. 2017.	✓	✓	81% reduction in S. aureus SSI rated in spine surgery with introduction of comprehensive nasal decolonization program, combined with existing body decolonization/CHG bath		Mupirocin *although its use was irregular*	
Candray K. Open Forum Infect Dis. 2020.	✓	✓	Switching from nasal povidone-iodine to alcohol-based nasal antiseptic for preoperative nasal decolonization resulted in: • 64% reduction in SSIs in spine fusion procedures • 100% reduction in SSI in laminectomy procedures		Povidone iodine	\$127K