

Nasal Decolonization

March, 2024

Overview

The nose is a common area for staphylococcus aureus colonization, including methicillin-susceptible and methicillin-resistant strains.¹ Due to the potential for bacterial transfer to other parts of the body, pre-surgical nasal decolonization with various antibiotic or alcohol-based preparations are frequently used to decrease the risk for surgical site infections in patients with planned procedures.² Decolonization may also be used for patients at high risk for staphylococcus aureus infections and/or those admitted to high-risk areas (e.g. intensive care unit).³ Nozin Nasal Sanitizer is described as a non-prescription, 62% alcohol-based antiseptic that reduces approximately 99.99% of nasal bacteria. According to manufacturers, the product is easy to use, moisturizing, and antibiotic free, having an active ingredient of ethyl alcohol.² Other antimicrobials and antiseptics used for nasal decolonization may include mupirocin, povidone-iodine, and bacitracin, as examples.⁴

Actions for Consideration

Partner: Identify potential stakeholders, including all specialties that may use or support the patient requiring nasal decolonization. This may include many specialties throughout a health system, including but not limited to patients admitted for both medical and surgical treatments. Nurses and nursing leadership are especially important to include, as nasal decolonization may be part of a nurse-driven protocol. Critical care and infectious disease specialists as well as quality and safety teams are important to include to help support value analysis decisions. Partnering with these stakeholders will be necessary when navigating conversations related to potential supplier standardization or product conversion.

Connect: Identify current use of nasal decolonization within the facility or health system, including utilization by patient type or procedure. Sharing this information with clinical leadership will help inform direction for standardization among products, procedure selection, and suppliers. Identify evidence related to specific products to help inform conversations. If attempting to standardize suppliers, clinician engagement is crucial. Leveraging a clinical champion may be helpful introduce and support potential changes.

Communicate: Share any planned changes (e.g. standardization, conversion) with the impacted teams. Discussions may include the impact on patient care and quality outcomes. Conversations may also include the benefit to streamlining products including financial impact and protocol changes. Robust and transparent information sharing will not only enhance discussions, but may lead to actionable conversations between peers.

HealthTrust Resources: Access the [Clinical Knowledge Insights Library](#) to find relevant documents and toolkits with actionable information. Examples for this product include resources around value analysis, standardization, and conversions.⁵ Network on [HealthTrust Huddle](#), our member community to shares ideas and seek guidance from colleagues.⁶ Additional information is found on the HealthTrust Member Portal within the [Pharmacy Drug Information Documents](#).⁷ This includes a specific review of Nozin and associated research.

Professional Society Statements and Clinical Practice Guidelines

The National Institute for Health and Care Excellence published updated guidelines (2020) on the prevention and treatment of surgical site infections. They state:

“Consider nasal mupirocin in combination with a chlorhexidine body wash before procedures in which Staphylococcus aureus is likely to cause a surgical site infection.”

According to these guidelines, the type of procedure and patient risk factors should also be taken into consideration. A link to the full guidelines may be found [here](#).⁸

Combined guidelines from the Society for Healthcare Epidemiology of America (SHEA), the Infectious Diseases Society of America (IDSA), and the Association for Professionals in Infection Control and Epidemiology (APIC) describe strategies to prevent methicillin-resistant *Staphylococcus aureus* (MRSA) transmission and infection. They include universal decolonization therapy for ICU patients (chlorhexidine bathing and nasal therapy) and preoperative nares screening for surgical patients. These guidelines note that alcohol-based nasal antiseptic agents have been proposed for suppression of nasal *S. aureus*, however further study may be required to understand clinical application and use. A link to the full guidelines may be found [here](#).⁹

FDA Approval

Manufacturers indicate that Nozin Nasal Sanitizer adheres to the over the counter drug review monograph process for products with alcohol as the primary ingredient and therefore may be marketed without an approved drug application.¹⁰ Detailed information on this process can be found [here](#).¹¹

Clinical Evidence

There is a large body of evidence describing the use and effectiveness of various antimicrobial and antiseptic preparations. Given the scope of the literature, a sample is provided below.

- A systematic literature review from Ontario Health (2022) analyzed the result of one systematic review and three randomized controlled trials related to pre-surgical nasal decolonization. The authors concluded that the use of nasal mupirocin combined with chlorhexidine body wash was effective in reducing surgical site infection by *S. aureus* in surgical patients undergoing cardiothoracic, vascular, orthopaedic, gastrointestinal, or general surgeries. However, they note that nasal mupirocin alone may have little to no difference in this same patient population.¹
- A review of the literature by Smith & Herwaldt (2023) assessed major studies describing decolonization of surgical or ICU patients who were colonized with *S. aureus*. Randomized controlled and quasi-experimental trials were of primary focus. These authors concluded that mupirocin is the most studied decolonization agent and is highly effective in decreasing surgical site infections in orthopedic and cardiac procedures. However, mupirocin protocols may have multiple steps and may contribute to mupirocin resistance. While povidone-iodine is bacteriostatic and can be used immediately prior to surgery, it demonstrates less effectiveness in ICU patients. The authors note that agents like intranasal alcohol, tea tree oil, and lysostaphin have been proposed for use as decolonizing agents, however, they lack robust study data supporting their use.⁴
- Huang et al (2023) completed a two-group noninferiority, cluster-randomized trial in 137 hospitals (n= 801,668 admissions) to assess the effectiveness of iodophor vs. mupirocin for universal ICU nasal decolonization combined with chlorhexidine bathing. The authors concluded that the universal use of mupirocin in conjunction with chlorhexidine was superior to universal iodophor and chlorhexidine for critically ill patients. Limitations of this study included generalizability and the potential for mupirocin resistance to influence findings.¹²

Physician Advisor Insight

A panel of infectious disease experts and critical care physicians within our HealthTrust Physician Advisor Network offered the following insight with regard to nasal decolonization.¹³

- A policy about how and when to screen and decolonize is essential.
- Decolonization of nares when combined with appropriate showers preop or daily bathing in the hospital has significant potential to reduce HAI if preformed appropriately and consistently.
- Five days of twice daily chlorhexidine and mupirocin is a current evidence-based method for MRSA screening and decolonization.
- Nozin has a short duration of action compared to povidone-iodine and mupirocin and therefore may not be optimal for MRSA decolonization.
- Conversion considerations include:
 - Patient comfort/discomfort related to product use.
 - Review risk of allergy and risk of toxicity to tissues.
 - Understand outcomes of use and potential for decreasing post-operative infections.

Clinical Advisory Board Insight

Members of the HealthTrust Clinical Nursing and Infection Prevention Boards provided insight into this category.¹⁴

- Some hospitals complete universal decolonization while others limit to perioperative patients receiving implants.
- Nasal decolonization may be part of the nursing protocol at some facilities.
- A combination of alcohol swabs, povidone-iodine swabs, and mupirocin ointment were reported as nasal decolonization products in use.
- Barriers to use may include:
 - Knowledge around when to use products (Non-prescription products may not appear on medication administration record).
 - Need for a medication order for some products (e.g. Mupirocin).
 - Patient allergies.
- Conversion considerations include:
 - Need to include infection prevention and nursing educators to provide education on product and protocols for use.
 - Would need in-services and tracked attendance at trainings.
 - May consider tracking patient outcomes post product implementation.
- Additional considerations note:
 - The SHEA compendium offers minimal evidence to support the effectiveness of Nozin.
 - Ease of implementation, low cost, and data to support reduction in hospital-acquired infections are necessary considerations.

Summary

Nasal decolonization is an important component in the prevention of surgical site infections. Various literature and guidelines suggest that nasal decolonization in combination with chlorhexidine bathing is highly effective in the prevention of surgical site infections, while further study may be required for other nasal preparations. If considering standardizing products, the inclusion of the appropriate clinical teams is essential to maintain high quality patient outcomes.

References

1. Pre-surgical Nasal Decolonization of Staphylococcus aureus: A Health Technology Assessment. *Ont Health Technol Assess Ser.* 2022;22(4):1-165.
2. Global Life Technologies Corp. Nozin <https://www.nozin.com/consumer-store/>. Published 2024. Accessed February 29, 2024.
3. Centers for Disease Control and Prevention. Strategies to Prevent Hospital-onset Staphylococcus aureus Bloodstream Infections in Acute Care Facilities. <https://www.cdc.gov/hai/prevent/staph-prevention-strategies.html>. Published 2024. Accessed March 11, 2024.
4. Smith M, Herwaldt L. Nasal decolonization: What antimicrobials and antiseptics are most effective before surgery and in the ICU. *Am J Infect Control.* 2023;51(11s):A64-a71.
5. HealthTrust Performance Group. Clinical Knowledge Insights. <http://www.hpginsights.com/>. Published 2023. Accessed September 25, 2023.
6. HealthTrust Performance Group. HealthTrust Huddle. <https://huddle.healthtrustpg.com/forum/>. Published 2023. Accessed September 25, 2023.
7. HealthTrust Performance Group. Drug Information Documents. <https://legacymembers.healthtrustpg.com/pharmacy/drug-information/drug-information-documents>. Published 2023. Accessed February 19, 2024.
8. National Institute for Health Care and Excellence. Surgical site infections: prevention and treatment. <https://www.nice.org.uk/guidance/ng125/chapter/Recommendations#nasal-decolonisation>. Published 2020. Accessed February 29, 2024.
9. Popovich KJ, Auredon K, Ham DC, et al. SHEA/IDSA/APIC Practice Recommendation: Strategies to prevent methicillin-resistant Staphylococcus aureus transmission and infection in acute-care hospitals: 2022 Update. *Infect Control Hosp Epidemiol.* 2023;44(7):1039-1067.
10. Nozin. Frequently Asked Questions. <https://www.nozin.com/wp-content/uploads/Patient-Education-FAQ.pdf>. Published n.d. Accessed February 29, 2024.
11. U.S. Food & Drug Administration. OTC Drug Review Process | OTC Drug Monographs. <https://www.fda.gov/drugs/otc-drug-review-process-otc-drug-monographs>. Published 2023. Accessed February 29, 2024.
12. Huang SS, Septimus EJ, Kleinman K, et al. Nasal Iodophor Antiseptic vs Nasal Mupirocin Antibiotic in the Setting of Chlorhexidine Bathing to Prevent Infections in Adult ICUs: A Randomized Clinical Trial. *JAMA.* 2023;330(14):1337-1347.
13. 2024 Physician Advisor Survey. Nasal Decolonization. Accessed March 2024.
14. 2024 Board Survey. Nasal Decolonization. Accessed March 2024.