Evaluation of nasal mupirocin use in intermediate medical care units at an acute care hospital

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Background

- Nasal mupirocin is a preventative strategy to reduce the incidence of hospital-acquired *Staphylococcus aureus* bloodstream infections.[1] *S. aureus* colonization, which is commonly located in the nares, leads to an increased risk of *S. aureus* infections[1]
- The Center for Disease Control and Prevention (CDC) recommends initiating nasal mupirocin in patients who are admitted to the intensive care unit (ICU), receiving dialysis, or undergoing high-risk surgeries[1]
- Local facility risk factors that warranted initiation of nasal mupirocin were current ICU admissions, documented history of methicillin-resistant *Staphylococcus aureus* (MRSA) colonization, current MRSA infection, incarceration, undergoing high-risk surgeries (joint replacement, open spine, or heart surgery), resident of long-term care facility or homeless shelter, receiving dialysis, or presence of central venous catheter (CVC) or midline
- The recommended frequency and duration of nasal mupirocin is twice a day for a maximum of five days[1]
- If the MRSA nasal swab was collected within 48 hours of initiating nasal mupirocin and results negative, nasal mupirocin can be discontinued per institution-wide protocol
- Patients in the intermediate medical care (IMC) units were evaluated as these patients have an increased likelihood of having a variety of risk factors
- The "ICU MRSA universal decolonization" order set was removed from the intermediate medical care unit reflex transition order

Objective

The purpose of this medication use evaluation is to assess how nasal mupirocin was initiated and discontinued per CDC and local facility risk factors before and after the order set was removed.

Methods

Single-center, retrospective chart review

Study Periods:

- Pre-intervention: August 15th to September 30th 2022
- Post-intervention: October 20th to November 30th 2022

Inclusion Criteria:

- At least 18 years of age
- Admitted in an IMC unit
- Received at least one dose of nasal mupirocin

- Patients were identified utilizing a clinical surveillance software and assessed on any local risk factors (patients could have more than one risk factor), followed by the duration and appropriate discontinuation of nasal mupirocin per institution-wide protocol

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Results

Table 1. Facility Risk Factors

Risk Factor	Pre-intervention n=193	Post-intervention n=73
ICU admission	25.3%	64.3%
History of MRSA colonization	1.5%	4%
Current MRSA infection	0.5%	5.4%
Undergoing high-risk surgeries	39.3%	20.5%
Resident of long-term care facility or homeless shelter	9.3%	27%
Undergoing dialysis	6.2%	4%
Presence of CVC or midline	15%	35.6%
No risk factors	37.8%	8%

Table 2. MRSA Nares Swab Results

Outcome	Pre-intervention n=122	Post-intervention n=61
Initial positive swab	7.3%	16.3%
Repeat positive swab	0%	0%

Table 3. Results

Outcome	Pre-intervention n=193	Post-intervention n=73
Percent of orders that qualified to be discontinued per protocol	45%	39%
Percent of orders that were discontinued per protocol	10%	14%
Days of nasal mupirocin use that could have been spared due to lack of discontinuation per protocol (mean ± SD)	1.7 ± 1.38	1.7 ± 1.19
Duration of use per patient (median, IQR)	3, 4	4, 4

Discussion

- Of the 193 patients that were screened in the pre-intervention period, 62.2% presented with local facility risk factors
- Eighty-seven percent of the nasal mupirocin ordered from order sets in the pre-intervention period was the "ICU MRSA universal decolonization" set, with only 23% being recent ICU admissions
- After nasal mupirocin was taken off the IMC reflex transition order on October 20, 2022, a decrease in orders for patients without risk factors was observed
- Ninety-two percent of patients in the post-intervention period had local facility risk factors. The remaining 8% of patients in the post-intervention period that did not have risk factors were started on nasal mupirocin due to an ICU consult being placed, but ultimately the patients were stabilized for IMC level of care and were not admitted into the ICU
- All patients with initial nasal swab samples positive for MRSA had negative repeat tests, if obtained
- Sixty-two percent of orders in the post-intervention period that could have been discontinued per institution-wide protocol were not, resulting in an average of 2 extra days of therapy per patient
- Some limitations include how data was not collected to assess if nasal mupirocin resulted in a reduction in *S. aureus* infections, patient risk factors could not be accurately assessed, as they could have history of risk factors that were not listed, and the facility risk factors are broader than the CDC risk factors.

Conclusion

- While the majority of pre-intervention period patients had nasal mupirocin initiated without any risk factors, a reduction in orders without risk factors was noticed once the order set was removed from the IMC transition order
- To further increase appropriate use, a nursing in-service can be performed to review the nursing protocol on when and how to discontinue nasal mupirocin

References

1. 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 December 16, 2019. Accessed December 22, 2022.

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