Introduction
Antibiotics are commonly used to reduce nasal colonization of Staphylococcus aureus (S. aureus).1, 2 S. aureus is an organism that poses a high risk for potentially dangerous bacterial infections for hospitalized and post-operative patients. The use of antibiotics in patients before admission may be inappropriate for consistent prevention of S. aureus infection within a healthcare setting and may promote antibiotic resistance.2,3 Safe and effective non-antibiotic alternatives, such as antiseptic nasal swabs, can reduce nasal colonization of S. aureus and other harmful microorganisms.4

Medline Alcohol Nasal Swabs* are pre-saturated with 62% ethyl alcohol (EtOH) to help provide effective nasal decolonization benefits with minimal nasal irritation side effects. Medline Alcohol Nasal Swabs can be used for nasal decolonization in patient, visitor, and healthcare worker populations to reduce the risk of infection.

Medline Industries, LP conducted a randomized clinical study through a third-party testing facility to evaluate the antimicrobial efficacy of Medline Alcohol Nasal Swab in reducing S. aureus colonies and total bacteria numbers in the nostrils.

Study methods
In a study population of 58 healthy adults (≥18 years), study investigators evaluated the antimicrobial efficacy of Medline Alcohol Nasal Swab in comparison to a negative control of a nasal swab saturated with 0.9% Sodium Chloride Irrigation, USP.

Prior to testing, participants underwent a screening evaluation. On the first day of screening, the participant was asked to blow their nose to ensure the nasal passages were clear, after which a technician swabbed one nostril. The swab was transferred to a sterile test tube. The contents of the swab were then plated to evaluate the number of S. aureus colonies, and the process was repeated for the other nostril.

Participants were required to have a baseline ≥ 3.7 log10 CFU (colony-forming unit) of S. aureus and ≥ 3.7 log10 CFU of total bacteria present to participate in the study.

Study testing began three to five days after the desired baseline CFU was confirmed. The participant was asked to again blow their nose and avoid touching their nose during the study procedures. Both nostrils of the participant were randomly treated with one treatment of either Medline Alcohol Nasal Swab or the negative control. At 30 seconds post-treatment, the nostrils were swabbed, and the swab was transferred to a sterile test tube and plated using HardyCHROM™ S. aureus agar. The number of S. aureus colonies was evaluated for the Alcohol Nasal Swab and the negative control treated nostrils. Reductions in bacterial counts were calculated for each participant by subtracting the CFUs after treatment from the baseline CFUs.
Evaluating the Antimicrobial Efficacy of Medline’s 62% Alcohol Nasal Swabs in Reducing *Staphylococcus aureus*

### Study design

#### Participant screening

- Potential participant undergoes a screening assessment, in which the participant was required to have ≥ 3.7 log_{10} CFU of *S. Aureus* and ≥ 3.7 log_{10} CFU total bacteria from each nostril swab sample.

- Potential participant returns ≥ 3 days later for baseline assessment to confirm desired baseline values of *S. Aureus* and total bacteria from each nostril.

- Data from 58 successfully screened participants included in statistical analysis.

#### Study intervention

- Swab and pool left and right nasal vestibules.

- Randomize.

- (3 Days Later) Treat right nostril with test or control swabs. Collect sample after 30 seconds.

- Treat left nostril with test or control swabs. Collect sample after 30 seconds.

- At 48 hours, all colonies counted on tryptic soy agar.

- At 24 hours, pink/fuchsia colonies counted on *S. Aureus agar*.

- Aliquots plated on *S. Aureus* or tryptic soy agar. 35°C.

- Pool left and right nostril samples.
**Study results**

The results of the study demonstrated that after a single application in the nostrils, Medline Alcohol Nasal Swab reduced *S. aureus* colonies from baseline by 88.8% after 30 seconds and reduced total bacteria CFUs from baseline by 91.9% after 30 seconds.

Comparatively, at 30 seconds post-application the negative control reduced *S. aureus* CFUs by only 39.7% and reduced total bacteria CFUs by 32.4%.

### Table 1. Medline Alcohol Nasal Swab vs. Negative Control *S. Aureus* and Total Bacteria CFU Reductions

<table>
<thead>
<tr>
<th></th>
<th>Medline Alcohol Nasal Swab (n=38 participants)</th>
<th>Negative Control (0.9% Sodium Chloride) (n= 20 participants)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><em>S. aureus</em> CFUs</td>
<td>Control <em>S. Aureus</em> CFUs</td>
</tr>
<tr>
<td>Baseline <em>S. aureus</em> CFUs</td>
<td>5.03 $\log_{10}$ = 107,152</td>
<td>5.33 $\log_{10}$ = 213,796</td>
</tr>
<tr>
<td>Post-Treatment <em>S. aureus</em> CFUs</td>
<td>4.08 $\log_{10}$ = 12,023</td>
<td>5.11 $\log_{10}$ = 128,825</td>
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<tr>
<td>Post-Treatment % Reduction in CFUs From Baseline</td>
<td>88.8%</td>
<td>Control Post-treatment % Reduction in CFUs from Baseline</td>
</tr>
<tr>
<td></td>
<td>Total Bacteria</td>
<td></td>
</tr>
<tr>
<td>Baseline CFUs</td>
<td>5.64 $\log_{10}$ = 436,516</td>
<td></td>
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<tr>
<td>Post-Treatment CFUs</td>
<td>4.55 $\log_{10}$ = 35,481</td>
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<tr>
<td>Post-Treatment % Reduction in CFUs From Baseline</td>
<td>91.9%</td>
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<tr>
<td></td>
<td>Control Total Bacteria</td>
<td></td>
</tr>
<tr>
<td>Control Baseline CFUs</td>
<td>5.77 $\log_{10}$ = 588,844</td>
<td></td>
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<tr>
<td>Control Post-treatment CFUs</td>
<td>5.60 $\log_{10}$ = 398,107</td>
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<tr>
<td>Control Post-treatment % Reduction in CFUs from Baseline</td>
<td>32.4%</td>
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</table>
Conclusions
Antiseptic alcohol-based nasal swabs are an alternative to antibiotics in decolonizing the nostrils to help reduce the presence of S. aureus and other harmful microorganisms. Medline Alcohol Nasal Swabs, pre-saturated with EtOH, are designed to provide effective nasal decolonization.

Antimicrobial efficacy testing of Medline Alcohol Nasal Swabs in comparison to a negative control showed that Medline Alcohol Nasal Swab treatment reduced S. aureus CFUs from baseline by 88.8%, compared to a 39.7% reduction in nostrils treated with the negative control swab. Overall, Medline Alcohol Nasal Swab reduced 49.1% more S. aureus CFUs than the negative control results. The study results demonstrate that Medline Alcohol Nasal Swabs can effectively reduce S. aureus colonies and other harmful microorganisms in the human nostrils after only one application.

References: