5. The PROTECT Trial: A Cluster Randomized Clinical Trial of Universal Decolonization with Chlorhexidine and Nasal Povidone Iodine Versus Standard of Care for Prevention of Infections and Hospital Readmissions among Nursing Home Residents

In this figure, each nursing home is represented by a circle. The size of the circle represents the amount of contributed patient days to the trial. The groups represent "as randomized" categories. Panel A shows the probability that a NH discharge was due to infection; panel B compares the probability that a nursing home discharge was to a hospital. The y-axis represents the odds ratio of these probabilities comparing the baseline period to the intervention period. The p values represent the significance of the difference between groups (the trial effect).

Conclusion. Universal NH decolonization with chlorhexidine and nasal iodophor significantly reduced the proportion of transfers to hospitals due to infection and discharges due to hospitalization. Our findings suggest that NH decolonization reduces serious infections and can decrease morbidity in this vulnerable population.

Disclosures. Loren G. Miller, MD, MPH, Medline (Grant/Research Support, Other Financial or Material Support, Contributed product) Stryker (Other Financial or Material Support, Contributed product) Xtrium (Other Financial or Material Support, Contributed product) James A. McKinnell, MS, Medline (Grant/Research Support) Raveena Singh, MA, Medline (Other Financial or Material Support, Contributed product) Gabrielle Gussin, MS, Medline (Other Financial or Material Support, Contributed product)

Methods. We performed a cluster randomized trial of 1:1 universal decolonization (decol) vs standard of care bathing (control) in 28 California NHs. After an 18 month baseline evaluation of hospitalization rates due to infection and MDRO prevalence, NHs were randomized to decol or control. Decol consisted of 1) chlorhexidine bathing; 2) nasal povidone iodine on admission x 5d and then M-F for 18mo. Primary outcome was the probability that a NH discharge was due to infection. Secondary outcome was the probability that a NH discharge was to a hospital.

Results. Four of 28 NHs dropped from the trial (3 decol, 1 control). Mean baseline hospitalization transfers due to infection was 58% and 57% in the intervention and control groups. In the intervention period, proportions were 57% and 48% in the control and decol groups. When accounting for clustering within NHs, hospital transfers due to infection had an OR of 0.91 (95% CI: 0.82-1.02) in the control group and an OR of 0.73 (95% CI: 0.61-0.87) in the decol group when comparing intervention to baseline period. For the primary outcome, decol had a 18% greater impact v. control (P=0.005, Fig. A). Baseline proportion of NH discharges due to hospitalization was 37% and 39% in the control and decol groups. In the intervention period, proportions were 36% and 33%. When accounting for clustering within NHs, the proportion of discharges due to hospitalization had an OR of 1.14 (95% CI: 1.06-1.22) in the control group and 0.91 (CI: 0.77-1.07) in the decol group when comparing the intervention period to the baseline period. For the secondary outcome, decol had a 23% greater impact v. control (P=0.001, Fig. B).

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Material Support, Conducted clinical trials and studies in which participating hospitals and nursing homes received contributed antiseptic products) **Xttrium** (Other Financial or Material Support, Co-Investigator in studies in which participating hospitals and nursing homes received contributed antiseptic and cleaning products) **Molnlycke** (Other Financial or Material Support, Co-Investigator in studies in which participating hospitals and nursing homes received contributed antiseptic and cleaning products) **Shruti K. Gohil, MD, MPH**

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6. **Staphylococcus aureus** in a Single Blood Culture Bottle: Should We be Concerned?

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**Session:** O-02. Blood Stream Infections and Sepsis

**Background.** *Staphylococcus aureus* bacteremia (SAB) is common and is characterized by high rates of morbidity and mortality. The clinical importance of a single positive blood culture bottle (SPBCB), however, is poorly defined despite it being a frequent laboratory finding. We therefore examined patients with SPBCB to determine its clinical significance and to understand the rationale of current practice.

**Methods.** We performed a retrospective, multicenter study of patients with a SPBCB for *S. aureus* in initial cultures from January 2019 to December 2019 using data collected from both electronic health records and the clinical microbiology laboratory.

**Table 1: Study Population**

| Characteristic | Contaminant (n=43) | Single Positive (n=12) | Total (n=55) | P-value |
|---------------|------------------|-----------------------|-------------|---------|
| Age, mean (SD) | 57.8 (15.6)      | 63.3 (17.9)           | 60.5 (17.0) | 0.074   |
| Male, %       | 62.5 (15)        | 80.0 (6.4)            | 74.5 (9.4)  | 0.182   |
| Charlson index, median (IQR) | 37.0 (17.0) | 26.0 (14.0) | 32.0 (18.0) | 0.117   |
| Comorbidities, median (n=38) | 3.7 (2.0) | 4.5 (2.0) | 4.1 (2.0) | 0.062   |

**Results.** Overall, 534 patients with SAB were identified, and 118 (22.1%) had a SPBCB. Among SPBCB cases, 106 (93.9%) were classified as clinically significant while 12 were considered contaminated or of unclear clinical significance. Baseline characteristics were similar between the groups (Table 1). A majority (92.4%) received antibiotic therapy, but patients with clinically significant bacteremia were treated with a longer antibiotic course (25.9 vs. 5.7 days, p < 0.001). Outcomes between those with SPBCB (contaminant vs clinically significant) were similar (Table 2). Of note, while there was no difference in use of echocardiography based on PREICT criteria between the clinically significant SPBCB vs. the multiple positive blood culture bottles (MPBC) cohorts (Table 3), significant differences were seen in both frequency of echocardiography (65.1% vs. 84.6%; P < 0.001) and IE diagnosis (3.8% vs. 14.2%; P = 0.002) for patients in the SPBCB vs. MPBC groups, respectively. In addition, those with MPBC had higher 90-day, 6-month and 1-year mortality rates.

**Table 2: Comparisons of outcomes in patients with a single positive culture considered a contaminant or of unclear clinical significance compared to those considered clinically significant**

| Characteristic | Contaminant, Single Positive (n=55) | Clinically Significant, Single Positive (n=106) | Total (n=161) | P-value |
|---------------|------------------------------------|--------------------------------------------|---------------|---------|
| 30-day mortality | 11 (22.2) | 19 (18.0) | 30 (18.6) | 0.159   |
| 60-day mortality | 20 (20.0) | 35 (26.0) | 55 (27.3) | 0.427   |
| 90-day mortality | 32 (28.0) | 59 (28.0) | 91 (28.0) | 0.984   |
| 1-year mortality | 41 (30.0) | 69 (33.0) | 110 (31.0) | 0.513   |
| 3-year mortality | 50 (43.0) | 84 (40.0) | 134 (40.0) | 0.753   |

**Table 3: Clinical Features of patients with a single positive culture considered a contaminant or of unclear clinical significance compared to those considered clinically significant**

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