

**Presentation Type:**

Poster Presentation

**Subject Category:** Implementation Science**Results of a Stepped-Wedge Cluster-Randomized Implementation Science Trial to Improve Chlorhexidine Gluconate Bathing Compliance**

Staci Reynolds and Edward Keating

**Background:** Daily chlorhexidine gluconate (CHG) bathing in intensive care units (ICUs) is widely supported in the literature to decrease risk of central-line-associated infections (CLABSIs). However, adoption of this practice is inconsistent. The primary objective of this implementation science study was to assess the effect of a bathing intervention on compliance with the AHRQ CHG bathing protocol. Secondary objectives were to examine (1) moderating effects of unit characteristics, (2) the intervention effect on nursing staff's knowledge and perceptions of CHG bathing, and (3) the intervention effect on CLABSI rates. **Methods:** A stepped-wedge cluster-randomized design was used to implement and evaluate the effectiveness of a CHG bathing intervention. At 2 large hospitals, 14 units were clustered into 4 sequences. Units included 9 adult ICUs, 3 pediatric ICUs, 1 pediatric bone marrow transplant unit, and 1 adult hematology-oncology unit. Sequences were enrolled into the active intervention phase over the course of 4 months. The intervention included 2 evidence-based implementation strategies: (1) educational outreach visits and (2) audit and feedback on CHG bathing compliance. Compliance with the CHG bathing processes and daily CHG bathing documentation were assessed. At 12 months after the last enrolled date, booster sessions were completed, and outcomes were assessed for sustainability. **Results:** In models of CHG bathing process compliance, the implementation strategy was significant ( $b = 6.97$ ;  $P = .009$ ), indicating that compliance was 6.97% higher after the intervention than before. There was a statistically significant improvement in nursing knowledge of CHG bathing ( $\chi^2 = 9.32$ ,  $p = .002$ ) and perception of the priority of CHG bathing ( $t = 2.56$ ;  $P = .01$ ). Daily CHG bathing documentation compliance and CLABSI rates did not significantly improve immediately following the intervention; however, a clinically significant decrease (27.4%) in CLABSI rate was observed. At 12 months after the intervention, improvements in CHG bathing documentation and process outcomes were sustained. There was no change in bathing process compliance after 12 months ( $b = -0.19$ ;  $P = .87$ ; intercept=96.96,  $p < .001$ ), and compliance remained high at 96.96%. There was no change in documentation compliance after 12 months ( $b = 3.89$ ,  $p = .37$ , intercept=78.72,  $p < .001$ ), and compliance remained high at 78.72%. After 12 months, CLABSI rates were statistically significantly reduced ( $b = -0.16$ ;  $P = .009$ ; intercept = 1.97,  $p < .001$ ). **Conclusions:** Using educational outreach visits and audit-and-feedback strategies can improve the adoption of evidence-based CHG bathing practices. CHG bathing—a simple, nurse-driven practice—can make a significant improvement in patient outcomes.

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**Presentation Type:**

Poster Presentation

**Subject Category:** Implementation Science**Antibiotic Stewardship Implementation at Hospitals Without On-Site Infectious Disease Specialists: A Mixed-Methods Study**

Daniel Livorsi; Eli Perencevich; Kenda Stewart Steffensmeier; Matthew Goetz and Heather Reisinger

**Background:** Hospitals are required to have antibiotic stewardship programs (ASPs), but there are few models for implementing ASPs without the support of an infectious disease (ID) specialist, defined as an ID physician and/or ID pharmacist. In this study, we sought to understand ASP implementation at hospitals within the Veterans' Health Administration (VHA) that lack on-site ID support. **Methods:** Using a mandatory 2016 VHA survey, we identified acute-care hospitals that lacked an on-site ID specialist. For each hospital, antibiotic use (2018–2019) was quantified

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as days of therapy (DOT) per 1,000 days present, based on NHSN methodology for tracking all antibacterial agents. From July 2019 through April 2020, we conducted semistructured interviews with personnel involved in or affected by ASP activities at 7 qualifying hospitals. All interview transcripts were analyzed using thematic content analysis. **Results:** Of the 7 acute-care hospitals, 6 (86%) had a long-term care unit; 3 (43%) had an intensive care unit; and 2 (29%) had full-time employment equivalents dedicated to stewardship. Sites averaged 1,075 (SD,  $\pm 654$ ) and 148 (SD,  $\pm 96$ ) admissions per year in acute-care and long-term care, respectively. At the site-level, mean antibiotic use was 486 DOT (SD,  $\pm 98$ ) per 1,000 days-present in acute-care and 207 DOT (SD,  $\pm 74$ ) per 1,000 days present in long-term care. We interviewed 42 personnel across the 7 sites. Although sites reported using similar interventions to promote antibiotic stewardship, the shape of these interventions varied. The following 4 common themes were identified: (1) The primary responsibility for ASPs fell on the pharmacist champions, who were typically assigned multiple other non-ASP responsibilities. (2) The pharmacist champions were more successful at gaining buy-in for stewardship initiatives when they had established rapport with clinicians, but at some sites, the use of contract physicians and frequent staff turnover were potential barriers. (3) Some sites felt that having access to an off-site ID specialist was important for overcoming institutional barriers to stewardship and improving the acceptance of their stewardship interventions. (4) In general, stewardship champions struggled to mobilize institutional resources, which made it difficult to advance their programmatic goals. **Conclusions:** In this study of 7 hospitals without local ID support, we found that ASPs are largely a pharmacy-driven process. Remote ID support, if available, was seen as helpful for implementing stewardship interventions. These findings may inform the future implementation of ASPs in settings lacking local ID expertise.

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**Presentation Type:**

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**Subject Category:** Other**Gamifying the Infection Control Curriculum: The Impact on Nursing Students' Knowledge, Exam Performance, and Course Perception**

Tomislav Mestrovic; Jasminka Talapko; Tina Cikac and Marijana Neuberger

**Background:** Unlike passive didactic teaching, the introduction of innovative active-learning approaches to university nursing curricula aims to address the educational content in an interactive learning environment, improving in turn the learning process and problem-solving skills indispensable for future infection control professionals. One such strategy is the use of educational games, which can motivate students and enhance the degree of their engagement. We appraised the effectiveness of introducing an interactive game based on a popular television quiz show "Who Wants to be a Millionaire?" for educational attainment, exam performance, and course perception in nursing students. **Methods:** A whole generation of second-year undergraduate nursing students (126 female and 27 male participants; age range, 19–41 years) from a public university in Croatia (University Centre Varazdin, University North) were divided into 2 groups by cluster randomization; one group had received additional hours of game play after core training curriculum in a "Hygiene and Epidemiology" course, while the other had not. Game play was accomplished by employing 'edutaining' interactive multimedia approach, and covered primarily hand hygiene, cough etiquette, the use of personal protective equipment, sterilization and disinfection, and safe injection practices. Quantitative results of multiple-choice exams were used to evaluate any differences in the knowledge level of respective groups. A satisfaction opinion survey was used to gauge attitudes of students attending the course. Statistical significance was defined as  $P < .05$  (2-tailed). **Results:** The mean baseline examination score was 28.30 $\pm$ 5.79 points for the game group and 24.65 $\pm$ 5.94 points for the control group, demonstrating improved knowledge retention when the interactive game was introduced into the curriculum.