563. Association Between Chlorhexidine Gluconate Concentrations and Resistant Bacterial Bioburden on Skin
Gita Nadimpalli, MD, MPH1; Lyndsay O’Hara, PhD, MPH2; Surbhi Leekha, MBBS, MPH3; Lisa Harris, MA4; Natalia Blanco, PhD, MPH5; J. Kristie Johnson, MD, D(ABMM)3 and Anthony Harris, MD, MPH6
1University of Maryland Department of Epidemiology and Public Health, Baltimore, Maryland; 2University of Maryland, Baltimore, Maryland; 3University of Maryland Dept of Pathology, Baltimore, Maryland; 4University of Maryland School of Medicine, Baltimore, Maryland
Session: 62. HAI: MRSA Prevention Thursday, October 3, 2019: 12:15 PM

Background. Little research exists to guide optimal Chlorhexidine gluconate (CHG) bathing practices. We examined the association between CHG concentrations and carbapenem-resistant Enterobacteriaceae (CRE), and vancomycin-resistant Enterococcus (VRE) on the skin. Also, we studied whether bioburden is affected by bathing method (2% CHG cloth vs. 4% liquid CHG soap) and time since last CHG bath.

Methods. Patients with MRSA, CRE and VRE at 4 US hospitals were enrolled. Skin swabs (arm, chest) were collected to quantify bioburden and CHG concentrations. Information on bathing method and time since last CHG bath was collected. χ2 test, Spearman’s correlation, and linear regression were performed.

Results. 253 patients were enrolled. On arm skin, MRSA was detected in 17 (19%), CRE on 16 (12%), and VRE on 12 (21%) patients. Detectable CHG levels were observed in 82 (93%) MRSA, 81 (79%) CRE, and 44 (79%) VRE patients. A negative correlation between increasing CHG concentrations and bacterial bioburden was observed. Bioburden was negatively correlated with CHG concentration for MRSA (rs = −0.15, P = 0.036) to 42.1% (TP3; P = 0.003), despite decreasing CHG prescription.

Conclusion. Mupirocin use policy can improve MUP susceptibility among MRSA isolates over time. Widespread OCT use did not appear to result in a rise of OCT MIC over the intervention period. Although the clinical significance of reduced susceptibility to CHG remains uncertain, this worrying trend in our institution deserves further studies to better understand mechanisms of CHG resistance.

Disclosures. All authors: No reported disclosures.

564. A Five Year Evolutionary Study of the Minimum Inhibitory Concentrations of Mupirocin and Chlorhexidine, and Octenidine in a Singaporean Tertiary Institution
Shuwei Zheng, MBBS, MRCP2; Shimin Jasmine Chung, MBBS, BSc, MRCP2; Si Xuan Tan, Pharmaceutical Science2; Tara M. Chlebicka3; Yiong Huak Chan, PhD4; Tze Peng Lim, PhD, BSc (Pharm)5; Lay Hoon Andrea Koa, PharmD6 and Maciej Piotr Chlebicki, MBBS, ABIM6
1Systematic General Hospital, Singapore; 2Singapore General Hospital, Singapore, Singapore; 3Changi General Hospital, Singapore; 4UNSW, Singapore; 5Yong Loo Lin School of Medicine, Singapore; 6TSAP, Singapore
Session: 62. HAI: MRSA Prevention Thursday, October 3, 2019: 12:15 PM

Background. Staphylococcus aureus (S. aureus) is a common cause of healthcare-associated infection. Eradication of S. aureus carriage reduces clinical infection and prevents transmission. In Singapore General Hospital, a series of hospital-wide measures were instituted over three years (Figure 1) to reduce mupirocin (MUP) resistance, and to decrease the bioburden of MRSA colonization amongst inpatients using octenidine (OCT)-based products.

Methods. A prevalence study was conducted at three time points (TPs) on consecutive MRSA screening isolates to evaluate for their minimum inhibitory concentrations (MICs) to CHG, OCT and MUP using broth microdilution sensitive plates and the presence of the ileS-2 gene, in 2013 (pre-intervention TP, TP1; n = 160), 2016 (early post-intervention TP, TP2; n = 99) and 2017 (late post-intervention TP, TP3; n = 76). Statistical analyses were performed using the Chi square test with reference from TP1.

Results. A significant improvement in MUP susceptibility by MIC (256 µg/mL) for 5 days) began in 2017 for patients with a central venous catheter, in intensive care.

Conclusion. Staphylococcus Aureus (S. aureus) is a common cause of blood stream infection and non-blood stream infection. Eradication of S. aureus carriage reduces clinical infection and prevents transmission. In Singapore General Hospital, a series of hospital-wide measures were instituted over three years (Figure 1) to reduce mupirocin (MUP) resistance, and to decrease the bioburden of MRSA colonization amongst inpatients using octenidine (OCT)-based products.

Disclosures. All authors: No reported disclosures.

565. Implementation of a Staphylococcus aureus Screening and Decolonization Program in a Multisite Urban Healthcare System
Tamar King-Morrieson, MD1; Anna Stachel, MPH2; Michael Phillips, MD2; Maria E. Aguero-Rosenfeld, MD3; Kenneth Inglima4 and Sarah Hochman, MD5
1NYU Langone Health, New York, New York; 2New York University, New York, New York; 3NYU School of Medicine, New York City, New York
Session: 62. HAI: MRSA Prevention Thursday, October 3, 2019: 12:15 PM

Background. Staphylococcus aureus (S. aureus) infection confers high mortality. S. aureus-colonized hospitalized patients are more likely to develop invasive infection and can transmit S. aureus to other patients in the absence of symptoms. Our health system has a baseline S. aureus colonization rate of 21% (MSSA and MRSA combined). To reduce risk of invasive S. aureus infection in our patients, we implemented an inpatient S. aureus screening and decolonization program.

Methods. Interventions include universal S. aureus screening and targeted decolonization for all patients on the Medicine and Pediatrics inpatient services. Adults patients are screened at admission and change in the level of care; pediatric patients are screened weekly. S. aureus screening began incrementally by unit between 2016 and 2017, and extended to transplant units in 2018. All cultures are processed in the hospital microbiology lab for identification of MRSA and MSSA. S. aureus decolonization (mupirocin ointment in nares twice daily, chlorhexidine 2% wipes below the chin daily) began in 2017 for patients with a central venous catheter, in intensive care.

Disclosures. All authors: No reported disclosures.
unit or multibed room. Decolonization was extended to all S. aureus-colonized patients beginning in June 2018, with involvement of a dedicated clinical nurse specialist. We compared compliance with screening and decolonization and the secondary outcome of MRSA bacteremia in the 6 month period before and after the addition of the clinical nurse specialist.

Results. 21.5% of screened patients were colonized with S. aureus (82.4% MSSA, 17.6% MRSA). Screening compliance improved from 39.4% of eligible patients (N = 1805) to 52.1% (N = 2024) and decolonization increased from 18.6% of colonized patients to 41.2% comparing January-June 2018 with July-December 2018. The MRSA bacteremia rate fell from 0.2/1,000 patient-days in the first half of 2018 to 0.1/1,000 patient-days in the second half of 2018.

Conclusion. A system-wide program that includes S. aureus screening and de-colonization of hospitalized patients found that 21% of patients had S. aureus colonization. Screening and decolonization compliance increased with the introduction of a dedicated clinical nurse specialist, and the MRSA bloodstream infection rate fell.

Disclosures. All authors: No reported disclosures.

566. Reduction of Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia in an Acute Care Hospital: Impact of Bundles and Universal Decolonization

Adriana Jimenez, MPH, MLS(ASCP), CIC1; Kathleen Sposato, RN MSN CIC2; Alicia de Leon-Sanchez, RN, MSN, MBA3; Regina Williams, BSN1; Reynande Francois, RN, BSN,MSN1; Juliana Wilson, RN, BSN, MSN1; Benjamin Lisondra, RN, BSN, BSA, MBA, MSN4; and Lilian Abdo, MD, FIDSA5; 1Jackson Health System, Infection Prevention and Control Department, Miami, Florida; 2Broward Health Medical Center, Ft. Lauderdale, Florida; 3Jackson North Medical Center, Miami, Florida; 4University of Miami Miller School of Medicine, Miami, Florida

Session: 62. HAI: MRSA Prevention
Thursday, October 3, 2019: 12:15 PM

Background. MRSA is a major concern for hospitalized patients in the United States. Hospital-Onset (HO) MRSA bacteremia is used as a proxy measurement of MRSA healthcare acquisition, exposure, and infection burden. HO MRSA bacteremia standardized infection ratio (SIR) is used by several national agencies as a quality report metric. Our institution had more than expected HO MRSA bacteremia cases despite several interventions. We describe the impact of a bundle of interventions aimed to decrease HO MRSA bacteremia in an acute care facility.

Methods. This quality improvement project was implemented in a 380-bed community hospital in Miami, FL from January 2017 to March 2019. HO MRSA bacteremia was defined as non-duplicate MRSA isolated from a blood culture collected >3 days after admission. SIR was calculated dividing the number of observed events by the number of predicted events; predicted events were obtained from the NHSN report. During baseline period (Figure 1, Phase 1 January 2015-August 2016) all adult patients in the intensive care unit (ICU) were screened for MRSA nasal colonization on admission and weekly thereafter, ICU patients received daily Chlorhexidine (CHG) bathing, and colonized/infectected patients with MRSA were placed in contact precautions. In Phase 2 (September 2016-June 2017) daily CHG bathing was switched from 2% wipes to 4% soap foam and expanded to all adult patients; ICU patients also received nasal decolonization with mupirocin. Nasal mupirocin in ICU was replaced with alcohol-based nasal sanitizer for all adult units in July 2017 (Phase 3). In April 2017 we discontinued using contact precautions for MRSA patients; nasal surveillance cultures were discontinued in October 2017. In May 2018 (Phase 4) we introduced alcohol-based wipes for patient hand hygiene at the bedside. SIR were compared by exact binomial test.

Results. We observed 48 HO MRSA bacteremia cases during the study period. The SIR decreased from 3.66 to 0.97 from baseline to postintervention period (P = 0.003). The largest decrease in cases and SIR was attained using combined hospital-wide daily CHG bathing, alcohol-based nasal sanitizer, and alcohol wipes for patient hand hygiene during Phase 4 (Table 1).

Conclusion. Our bundle of interventions for universal decolonization was successful in decreasing HO MRSA bacteremia.

Figure 1. HO-MRSA Bacteremia SIR by Phase of the Intervention Bundle

Disclosures. All authors: No reported disclosures.

567. Does Universal Nasal Decolonization with an Alcohol-Based Nasal Antiseptic Reduce Infection Risk and Cost? Martin Arden, RN, BSN; Adriana de Leon-Sanchez, BSN; Pinellas, Tarpon Springs, Florida

Session: 62. HAI: MRSA Prevention
Thursday, October 3, 2019: 12:15 PM

Background. Nasal decolonization with mupirocin to reduce infection risk, has been associated with mupirocin-resistant Staphylococcus aureus (SA). A community hospital identified two patients colonized with methicillin and mupirocin-resistant SA (MRSA), one scheduled for surgery, one for inpatient IV antibiotic therapy. Instead of mupirocin, an alcohol based nasal antiseptic was applied to these patients twice daily for 5 days, resulting in a negative MRSA nasal screening test in both patients. Neither patient developed an infection during or after treatment. Building on this success, a plan was made to assess the impact of universal nasal decolonization to replace screening and contact precautions for MRSA colonized patients, and to reduce surgical site infections (SSI).

Methods. A 12-month project using a before and after design, was initiated in April 2018. The project involved twice daily application of alcohol-based nasal antiseptic for all inpatients, and preoperatively for all surgical patients in addition to existing prophylactic daily chlorhexidine (CHG) bathing. No other practice change was made during this period. Assessment of impact was planned by comparing the incidence of MRSA bacteremia and SSI at baseline (2017) and after project implementation, in addition to costs avoided with reduced nasal screening and CP.

Results. Compared with baseline, April 2018 and March 2019, there was a decrease in MRSA bacteremia from 3/1,000 patient-days to 0/1,000 patient-days, a reduction in CP from 3.78 to 1.53/1,000 patient-days, a reduction in nasal screens from 3,874 to 605, and a reduction of all-case (Gram-negative and Gram-positive) SSI from all surgical procedures from 0.433 to 0.187/1,000 patient-days. Accounting for the cost of the nasal antiseptic, the reduction in gowns, gloves and nasal screening tests resulted in $104,099.91 costs avoided.

Conclusion. House-wide application of alcohol-based nasal antiseptic in place of screening and contact precautions, resulted in a reduced incidence of both MRSA bacteremia and SSI for all types of surgical procedures, in addition to significant costs avoided.

Disclosures. All authors: No reported disclosures.

568. A Randomized, Double-Blinded, Placebo-Controlled Trial of Retapamulin for Nasal and Rectal Decolonization of Mupirocin-Resistant Methicillin-Resistant Staphylococcus aureus Among Children

Aimi Patel, MD, MPH; Bo Shopsin, MD, PhD; Anna Stachel, MPH and Jennifer Lighter, MD, NYU Langone Health, New York, New York

Session: 62. HAI: MRSA Prevention
Thursday, October 3, 2019: 12:15 PM

Background. Colonization with Staphylococcus aureus, particularly MRSA, is a crucial risk factor for subsequent infection. Decolonization measures are often under-taken to prevent recurrent MRSA infection and transmission; however, increasing rate of resistance to the gold standard mupirocin has been noted globally. At our institution, there is >85% high-level resistance to mupirocin among strains from a geographically defined genotypic cluster of CA-MRSA in children from Orthodox communities in Brooklyn. Retapamulin is a topical bacteriostatic pleuromutilin antibiotic that has demonstrated excellent in vitro activity against mupirocin-resistant isolates from pedi-atric patients with MRSA infection presenting to our institution suggesting that it may be a promising alternative decolonization therapy. We sought to determine the efficacy of retapamulin as a topical decolonization agent against mupirocin-resistant MRSA among the identified high-risk Brooklyn cluster via a randomized, placebo-controlled, double-blinded phase three trial.

Methods. Children aged 9 months-17 years who resided in high-risk zip codes used as a proxy for Orthodox Jewish predominant neighborhoods were recruited either from inpatient units at NYU Langone or at a partnered community clinic. Participants were screened via nasal and rectal culture to detect MRSA colonization. Enrolled participants were randomized to receive either retapamulin or placebo and instructed to apply the ointment nasally and rectally twice a day for 5 days. Repeat nasal and rectal swabs were collected one month after completion of topical therapy to assess MRSA colonization status. The change in colonization rates was assessed via Fisher’s exact test.

Results. 173 participants were screened from December 2017 to March 2019 in which 166 completely underwent randomization (23 in the retapamulin group and 24 in the placebo group). The median age was 3.9 years (SD 3.5 years). Children in the placebo group were 15.2 times more likely to be colonized with MRSA after one week of the decolonization protocol compared with the retapamulin group (OR 15.2, CI