of Medicine, University of California at Irvine, Irvine, California; [7]Harvard Medical School/Harvard Pilgrim Health Care Institute, Boston, Massachusetts; [8]University of Pennsylvania, Broomall, Pennsylvania; [9]Washington University School of Medicine, St. Louis, Missouri; [10]Rush Presbyterian Hosptial, Skokie, Illinois; [11]Duke University Medical Center, Durham, North Carolina; [12]Harvard Pilgrim Healthcare and Harvard Medical School, Brigham and Women's Hospital, Brighton, Massachusetts

Session: 98. To Decolonize or Not to Decolonize: Do We Still Need to Ask the Question
Thursday, October 3, 2019: 3:45 PM

Background. Higher CHG skin levels may be needed to adequately control infection and transmission of pathogens in the ICU. We assessed whether measurement and feedback of patient CHG skin concentrations could improve CHG bathing quality and identified factors associated with higher CHG skin concentrations.

Methods. We conducted 6 one-day surveys from January 2018 to February 2019 in 7 academic hospital MICUs with established daily CHG bathing. Adults admitted >1 day were assessed for CHG skin levels with a semi-quantitative colorimetric assay using swabbed 25 cm^2 areas of anterior neck, axilla, and inguinal skin. Prior to survey 4, results from the first 3 surveys (baseline) were reported to ICU leadership and frontline staff to retrain and reeducate on bathing technique. Feedback of results from prior surveys also occurred before surveys 5 and 6. For statistical analysis, mixed-effects models accounted for clustering of CHG measurements within patients and ICUs. We categorized CHG product type as "cloth" for no-rinse 2% CHG-impregnated cloth and "liquid" for 4% CHG liquid or foam.

Results. In total, 681 of 704 (97%) patients were enrolled. Three ICUs used CHG cloth, 3 ICUs used CHG liquid, and 1 ICU switched from liquid to cloth after the second survey. Median CHG skin concentrations were higher in both the baseline and feedback period for institutions using CHG cloth, as compared with liquid (table). Across all time points, axillary and inguinal regions had higher skin CHG concentrations than the neck (median 39.1, 78.1, 19.5 µg/mL, respectively, $P < 0.001$). After controlling for age, mechanical ventilation, presence of a central venous catheter, body site, and hours since last CHG bath, institutions that used CHG cloth had a 3-fold increase in adjusted CHG skin concentrations in the feedback period compared with the baseline period ($P = 0.001$, Figure). There was no significant change in CHG skin concentrations from baseline to feedback period for institutions that used liquid CHG.

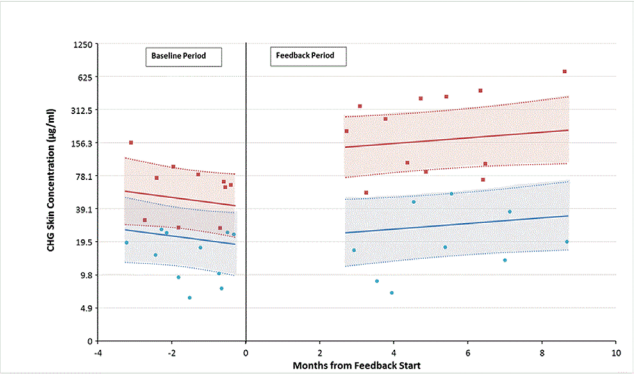
Conclusion. CHG skin concentrations on MICU patients receiving daily CHG bathing varied by body site and CHG product type. The use of CHG cloth was associated with higher CHG skin levels, compared with CHG liquid. For ICUs using CHG cloth, feedback of CHG skin concentration results to ICU staff improved CHG bathing quality.

Table: Unadjusted Median Chlorhexidine Gluconate (CHG) Skin Concentration Measurements on Medical Intensive Care Patients during Baseline and Feedback Period

CHG Bathing Method	Median CHG Skin Concentration, µg/ml (IQR)		*P*-value
	Baseline Period	Feedback Period	
2% CHG cloth	78 (9.8-312.5)	312.5 (39.1-1250)	0.001
4% CHG liquid/foam	9.8 (0-39.1)	19.5 (2.5-78.1)	0.74

Note: Total skin swabs obtained = 2,011 (cloth: 1,134; liquid/foam: 877). Table *P*-values represents differences in CHG skin concentrations between baseline and feedback period by CHG bathing method, as determined using mixed effects models. Median skin concentrations for 2% CHG cloth were higher than 4% CHG liquid/foam during both baseline and feedback periods (*P*=0.01).

Figure: Modeled Chlorhexidine Gluconate (CHG) Skin Concentration Measurements on Medical Intensive Care (MICU) Patients during Baseline and Feedback Period



Note. Total number of patients = 681. CHG skin concentrations expressed in medians (solid line) and 95% confidence intervals (dotted lines) with three body sites (neck, axilla, inguinal region) combined. Red squares represent MICUs that used 2% CHG cloth and blue circles represent those that used 4% liquid or foam for daily patient bathing. The first 3 surveys occurred prior to education and retraining (baseline period), followed by surveys 4-6 during which active bathing education and retraining occurred (feedback period). Month 0 corresponds to the time when the first set of CHG skin concentration results was made available to each institution for MICU feedback.

Disclosures. **All Authors:** No reported Disclosures.

896. A Safe, More Cost-Effective Protocol: Universal Decolonization vs. MRSA Screening and Contact Precautions

Jacqueline Whitaker, RN MS LHRM CPHQ CIC; Barmak Kusha, MPH; Joshua Longcoy, MPH; Amanda H. Rutter, MPH, CPH, CIC; Sheryl Ferrier, MPH CPH; Caitlin R. Marzi, MPH, CPH and Leslie Montalvo Gonzalez, RN, BSN, MPH; AdventHealth Tampa, Tampa, Florida

Session: 98. To Decolonize or Not to Decolonize: Do We Still Need to Ask the Question
Thursday, October 3, 2019: 4:00 PM

Background. A trial of universal decolonization (alcohol-based nasal antiseptic plus chlorhexidine gluconate bathing) was instituted for 12 months, in a 536-bed short-term acute care hospital, as a replacement for nasal screening, contact precautions (CP) and decolonization of methicillin-resistant *Staphylococcus aureus* (MRSA)-colonized patients. The impact on the rate of MRSA bacteremia and costs associated with nasal screening tests, isolation, and gown use was assessed.

Methods. Prior to the universal decolonization trial, patients at high-risk for MRSA colonization were screened using a nasal polymerase chain reaction (PCR) test, and those that tested positive were decolonized with 5 days of mupirocin nasal ointment and daily CHG bathing, and were placed in CP. Starting in April 2018, a universal decolonization protocol was instituted for all hospitalized patients, with a twice-daily alcohol-based nasal antiseptic (in place of mupirocin), and daily bathing with CHG foam soap (in place of CHG cloths). Nasal screening of high-risk patients, targeted decolonization and CP for MRSA-colonized patients, was discontinued during the 12-month universal decolonization trial period. Outcome measures for the trial included MRSA bacteremia per National Healthcare Surveillance Network (NHSN) multi-drug-resistant organism (MDRO) Lab ID definition, isolation day count, utilization of gowns, and nasal screening tests with estimated costs associated. Measures for the 12-month trial period were compared with those of the prior 12-month period, i.e., April 2017–March 2018.

Results. Compared with prior 12-month period, during the universal decolonization trial, there was a 42% reduction in isolation days ($118/day), a 74% reduction in nasal PCR tests ($36/each), and an 11% decrease in the monthly use of gowns ($12/each). The total cost avoidance (after accounting for the cost of the alcohol-based nasal antiseptic and CHG soap) was $1,394,685. There was no statistical change in the MRSA bacteremia rate (0.067 to 0.070) per 1,000 patient-days.

Conclusion. Replacement of nasal screening, decolonization, and CP for colonized MRSA patients with universal decolonization, using twice daily alcohol-based nasal antiseptic paired with daily CHG bathing, was found to be a safe and cost-saving protocol.

Disclosures. **All Authors:** No reported Disclosures.

897. Prevalence of Candida auris at Body Sites, Characterization of Skin Microbiota, and Relation of Chlorhexidine Gluconate (CHG) Skin Concentration to C. auris Detection Among Patients at a High-Prevalence Ventilator-Capable Skilled Nursing Facility (vSNF) with Established CHG Bathing

Mary K. Hayden, MD[1]; Thelma E. Dangana, MBBS[1]; Rachel D. Yelin, MPH[1]; Michael Schoeny, PhD[2]; Pamela B. Bell, II, BA[1]; Mary Stanley, MS[1]; Nailliw Preite, MS[1]; Nadia Khan, BS[1]; Osayuwamen Edomwande, BS[1]; Stephanie R. Black, MD, MSc[3]; Massimo Pacilli, MS, MPH[3]; Xin Huang, PhD[4]; Clay Deming, MS[4]; Michael Y. Lin, MD, MPH[1] and Julia A. Segre, PhD[5]; [1]Rush University Medical Center, Chicago, Illinois; [2]Rush University, Chicago, Illinois; [3]Chicago Department of Public Health, Chicago, Illinois; [4]National Institutes of Health, Bethesda, Maryland; [5]National Institutes of Health, Bethesda, Maryland

Session: 98. To Decolonize or Not to Decolonize: Do We Still Need to Ask the Question
Thursday, October 3, 2019: 4:15 PM

Background. vSNF patients are at high risk of colonization and infection with *C. auris*. CHG bathing has been used as an intervention to reduce nosocomial transmission of multi-drug-resistant organisms, but its effect on *C. auris* is unclear.

Methods. We studied a 70-bed ventilator ward in a 300-bed vSNF in Chicago, IL with a high prevalence of *C. auris* and established CHG bathing. Swab samples were collected from patients for culture, microbiome analysis, and CHG skin concentration testing (Table 1).

Results. We collected 2,467 samples (950 culture, 950 microbiome, 567 CHG) from 57 patients during 2 surveys conducted January–March 2019. Forty-six (81%) patients had *C. auris* cultured from ≥1 body site. Mean (±SD) age was 59 (±14) years, 40% were women, 70% were African American, mean (±SD) Charlson score was 3 (±2). Patients colonized with *C. auris* were more likely to be mechanically ventilated (50% vs. 0%, $P < 0.001$), have a gastrostomy tube (78% vs. 27%, $P < 0.001$) or have urinary catheter (72% vs. 23%, $P = 0.01$) than noncolonized patients. Frequency of *C. auris* isolation varied among 10 body sites tested ($P < 0.001$); colonization of anterior nares (41%) and hands (40%) was detected most often (Figure 1). By ITS1 analysis, all isolates were members of the *C. auris* South American clade. Skin microbiome sequencing confirmed culture Results. While Malassezia is the dominant genera observed in healthy volunteers and patients in this vSNF, *C. auris* was observed to dominate the fungal community of multiple skin sites, including nares, hands, inguinal, toe web (Figure 2). Other *Candida* spp. were also identified on the skin of patients in the current study, but at lower relative abundance. CHG was detected on skin of 52 (91%) patients (median CHG concentration 19.5 µg/mL; IQR 4.9–78.1 µg/mL). In a mixed-effects model controlling for body site and multiple measurements per patient, odds of *C. auris* detection by culture were less at CHG concentrations ≥625 µg/mL than at lower concentrations (Figure 3; OR 0.25, 95% CI: 0.10–0.66; $P = 0.005$).

Conclusion. Frequent *C. auris* colonization of vSNF patients' anterior nares and hands suggests that nasal decolonization and patient hand hygiene are potential options to reduce *C. auris* transmission. High concentrations of CHG may be needed to suppress *C. auris* on skin.

Table 1. Body sites selected for sampling and analysis

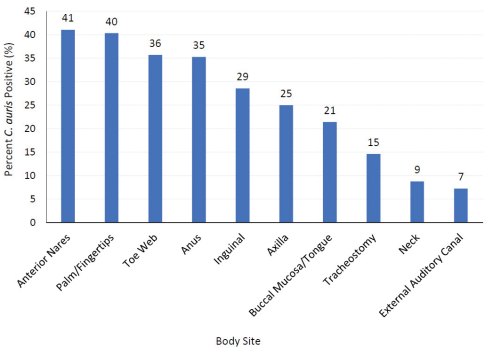
Body Site	Analysis		
	Culture[1]	Microbiome[2]	CHG Concentration[3]
Anterior nares	X	X	
External auditory canal	X	X	
Neck	X	X	X
Axilla	X	X	X
Inguinal	X	X	X
Anus	X	X	X
Toe web	X	X	X
Palm/fingertips	X	X	X
Buccal mucosa/tongue	X	X	
Tracheostomy	X	X	

[1]Salt Sabourad Dulcitol Broth enrichment followed by subculture to CHROMagar™ Candida (BD)

[2]DNA extraction directly from swab samples, then amplification with 16S rRNA gene and fungal ITS1 region primers, Illumina® sequencing, analysis.

[3]Colorimetric detection.

Figure 1: Proportion *C. auris* Positive Samples at first Survey by Body Site (N = 57 patients, 541 samples)



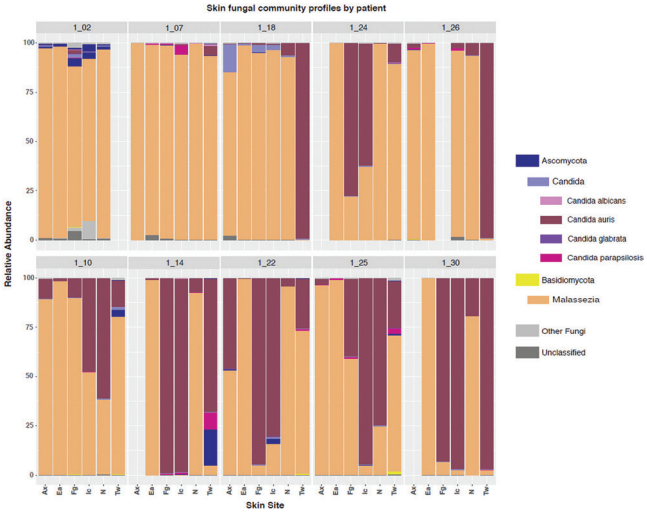
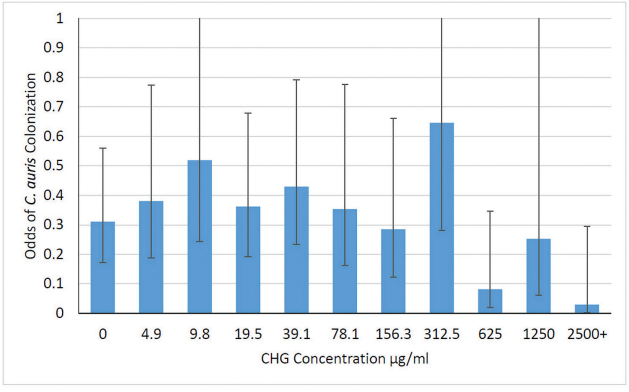


Figure 3. Relation between CHG concentration and odds of recovery of *C. auris* by culture



Bars indicate 95% confidence limits.

Disclosures. **All Authors:** No reported Disclosures.

898. Influenza Vaccination Reduces Risk of Severe Outcomes among Adults Hospitalized with Influenza A(H1N1)pdm09, FluSurv-NET, 2013–2018

Shikha Garg, MD, MPH[1]; Lauren Beacham, MA[1]; Carmen S. Arriola, DVM, PhD[1]; Alissa O'Halloran, MSPH[1]; Charisse N. Cummings, MPH[1]; Art Reingold, MD[2]; Nisha B. Alden, MPH[3]; Kim Yousey-Hindes, MPH, CPH[4]; Evan J. Anderson, MD[5]; Maya Monroe, MPH, BS[6]; Sue Kim, BS, MPH[7]; Ruth Lynfield, MD[8]; Lourdes Irizarry, MD[9]; Alison Muse, MPH[10]; Nancy M. Bennett, MD, MS[11]; Laurie M. Billing, MPH[12]; Ann Thomas, MD[13]; Keipp Talbot, MD MPH[14]; Keegan McCaffrey, BA[15]; Alicia M. Fry, MD, MPH[1] and Carrie Reed, DSc, MPH[1]; [1]Centers for Disease Control and Prevention, Atlanta, Georgia; [2]UC Berkeley, Berkeley, California; [3]Colorado Dept of Public Health and Environment, Denver, Colorado; [4]Connecticut Emerging Infections Program, New Haven, Connecticut; [5]Emory University School of Medicine, Atlanta, Georgia; [6]Maryland Department of Health, Baltimore, Maryland; [7]Michigan Department of Health and Human Services, Lansing, Michigan; [8]Minnesota Department of Health, Saint Paul, Minnesota; [9]New Mexico Department of Health, Santa Fe, New Mexico; [10]New York State Department of Health, Albany, New York; [11]University of Rochester, Rochester, New York; [12]Ohio Department of Health, Columbus, Ohio; [13]Oregon Health Authority, Portland, Oregon; [14]Vanderbilt University Medical Center, Nashville, Tennessee; [15]Utah Department of Health, Salt Lake City, Utah

Session: 99. Vaccines I - Influenza and RSV

Thursday, October 3, 2019: 3:15 PM

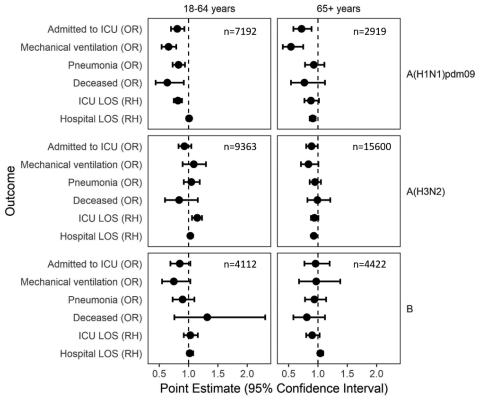
Background. Influenza vaccination may reduce illness severity among those with influenza; however, data are limited. We determined whether outcomes were less severe among vaccinated compared with unvaccinated adults hospitalized with influenza over 5 seasons.

Methods. We included adults (≥18 years) hospitalized with laboratory-confirmed influenza during seasons 2013–2014 through 2017–2018 and identified through the US Influenza Hospitalization Surveillance Network (FluSurv-NET). Vaccination status was obtained through medical records, vaccine registries, and interviews. We excluded patients who were institutionalized, did not receive antivirals, or had unknown vaccine status or vaccine receipt <14 days before positive influenza test. We used inverse propensity score weighting to balance differences between vaccinated and unvaccinated groups and multivariable logistic and competing risk regression to evaluate the association between vaccination and outcomes including pneumonia, intensive care unit (ICU) admission, mechanical ventilation (MV), death, and ICU and hospital length of stay (LOS) in days. Models were adjusted for season and admission timing in relation to timing of antiviral treatment, symptom onset and season peak.

Results. Among 67,452 adults hospitalized with influenza, 43,608 were included; 47% were 18–64 years (38% vaccinated) and 53% were ≥65 years (65% vaccinated). Among patients with influenza A(H1N1)pdm09, vaccination was associated with decreased odds of ICU admission (odds ratio (OR) 0.81; OR 0.72) and MV (OR 0.66; OR 0.54) in adults 18–64 and ≥65 years, respectively; decreased odds of pneumonia (OR 0.83), death (OR 0.64) and shortened ICU LOS (relative hazard (RH) 0.82) in adults 18–64 years; and shortened hospital LOS (RH 0.91) in adults ≥65 years (figure). Vaccination was not associated with attenuation of severe outcomes in patients with influenza A(H3N2) and B.

Conclusion. Vaccination was associated with reduced odds of severe outcomes, including death, by up to 36% in adults hospitalized with influenza A(H1N1)pdm09. All adults without contraindications should receive annual influenza vaccination as there is evidence that it can improve outcomes among those who develop influenza despite vaccination.

Figure. Association between influenza vaccination and severe outcomes among adults hospitalized with influenza by age group and influenza type/subtype, FluSurv-NET, 2013-2018



Disclosures. **All Authors:** No reported Disclosures.

899. Influenza Vaccine Effectiveness Against Laboratory-Confirmed Influenza in Children Hospitalized with Respiratory Illness in the United States, 2016–2017 and 2017–2018 Seasons

Angela P. Campbell, MD, MPH[1]; Constance E. Ogokeh, MPH[1]; Craig McGowan, MS[1]; Brian Rha, MD, MSPH[1]; Rangaraj Selvarangan, BVSc, PhD[2]; Mary. A. Staat,