

Presentation Type:

Poster Presentation

Interfacility Spread of OXA-23-Producing Carbapenem-Resistant *Acinetobacter*—Connecticut, 2018–2019

Sydney Jones, CDC; Meghan Maloney, Connecticut Department of Public Health, Healthcare Associated Infections & Antimicrobial Resistance Program; Anu Paranandi, Connecticut Department of Public Health; Lauren Backman; Jafar Razeq; Dana Pepe, Connecticut Department of Public Health, Yale School of Medicine, LEAP Fellow, IDSA/SHEA/PIDS; Elizabeth Nazarian, Wadsworth Center-NYS DOH; Shannon Morris, Wadsworth Center - NYS DOH; Wagner Christine, Wadsworth Center - NYS DOH; Janine Bodnar, Wadsworth Center - NYS DOH; Kailee Cummings, Wadsworth Center - NYS DOH; Vivian Leung, Connecticut Department of Public Health

Background: Carbapenem-resistant *Acinetobacter baumannii* (CRAB), a multidrug-resistant gram-negative bacterium, can cause difficult-to-treat infections with mortality in approximately half of CRAB cases. CRAB can spread among healthcare facilities after transfer of an infected or colonized patient. Strategies to limit CRAB spread include adherence to contact precautions, environmental cleaning with bleach, and screening to identify colonized patients. During July–September 2018, the Connecticut Department of Public Health (DPH) worked with an acute-care hospital (hospital A) to contain an outbreak of OXA-23-producing CRAB (OXA-23 is an enzyme that confers resistance to carbapenems). During November 2018–March 2019, statewide CRAB surveillance identified additional cases of related OXA-23-producing CRAB at other healthcare facilities. DPH, Connecticut State Public Health Laboratory (SPHL), and the Antibiotic Resistance Laboratory Network (ARLN) investigated to prevent additional cases. **Methods:** Since January 2017, CRAB isolates have been routinely sent to SPHL and ARLN for carbapenemase gene detection and whole-genome sequencing (WGS) to determine isolate relatedness. During November 2018–March 2019, DPH collected patient healthcare history for patients with CRAB isolates to identify outbreaks and provide assistance in infection control and prevention to healthcare facilities reporting CRAB cases. Beginning May 2019, DPH and ARLN offered facilities screening to identify patients colonized with OXA-23-producing CRAB. **Results:** Of 10 OXA-23-producing CRAB isolates reported to DPH during

November 2018–March 2019, 3 were closely related to the 9 isolates from hospital A's outbreak by WGS (single-nucleotide polymorphism difference range, 1–16). One isolate was from a patient who had been admitted to hospital A during July 2018. All 3 patients with CRAB isolates shared a history of residence at long-term-care facility A (LTCF A). Two patients received a CRAB infection diagnosis upon admission to hospital B after transfer from LTCF A. Both LTCF A and hospital B performed environmental cleaning with bleach and placed CRAB-identified patients on contact precautions. LTCF A declined screening patients for CRAB, whereas hospitals B and C, which receive frequent transfers from LTCF A, screened all patients on admission from LTCF A. During May–September 2019, among 6 patients screened, 1 was colonized with OXA-23-producing CRAB and was placed on contact precautions. **Conclusions:** Transfer of patients who are infected or colonized with CRAB among hospitals and LTCFs can facilitate the regional spread of CRAB. Strategies for containing the spread of carbapenemase-producing organisms include adherence to contact precautions, colonization screening, interfacility communication, and collaboration with public health.

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Intranasal Antiseptic and Universal Antiseptic Baths Are Effective in Reducing MRSA Acquisition in Extended-Care Facilities

Angela Chow, Tan Tock Seng Hospital; Wei Zhang, Dept of Infection Control, Tan Tock Seng Hospital; Joshua Wong, Dept of Clinical Epidemiology, Tan Tock Seng Hospital; Brenda Ang, Tan Tock Seng Hospital

Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a growing clinical problem in rehabilitation hospitals, where patients stay for extended periods for intensive rehabilitation therapy. In addition to cutaneous sites, the nares could be a source for nosocomial MRSA transmission. Decolonization of nasal and cutaneous reservoirs could reduce MRSA acquisition. We evaluated the effectiveness of topical intranasal octenidine gel, coupled with universal chlorhexidine baths, in reducing MRSA acquisition in an extended-care facility. **Methods:** We conducted a quasi-experimental before-and-after study from January 2013 to June 2019. All patients admitted to a 100-bed rehabilitation hospital specialized in stroke and trauma care in Singapore were screened for MRSA colonization on admission. Patients screened negative for MRSA were subsequently screened at discharge for MRSA acquisition. Screening swabs were obtained from the nares, axillae, and groin and were cultured on selective chromogenic agar. Patients who tested positive for MRSA from clinical samples collected >3 days after admission were also considered to have hospital-acquired MRSA. Universal chlorhexidine baths were implemented throughout the study period. Intranasal application of octenidine gel for MRSA colonizers for use for 5 days from admission was added to the hospital's protocol beginning in September 2017. An interrupted time series with segmented regression analysis was performed to evaluate the trends in MRSA acquisition before the intervention (January 2013–July 2017) and after the intervention (September 2017–June 2019) with intranasal octenidine. August 2017 was excluded from the analysis because the intervention commenced midmonth. **Results:** In total,

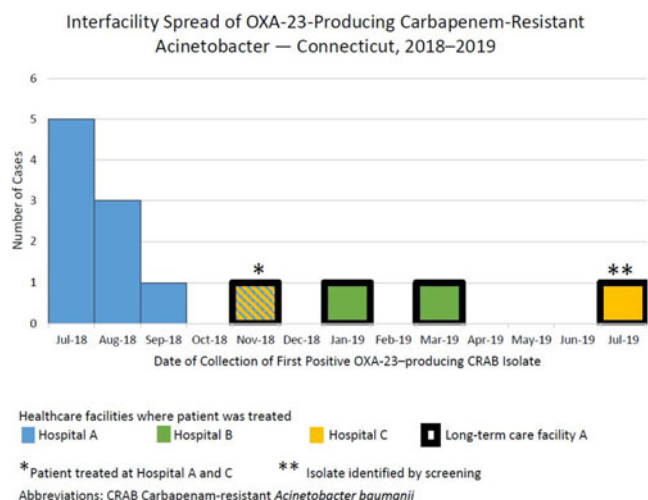


Fig. 1.

77 observational months (55 before the intervention and 22 after the intervention) were included. The mean monthly MRSA acquisition rates were 7.0 per 1,000 patient days before the intervention and 4.4 per 1,000 patient days after the intervention ($P < .001$), with a mean number of patient days of 2,516.3 per month before the intervention and 2,427.2 per month after the intervention ($P = .0172$). The mean monthly number of MRSA-colonized patients on admission to the hospital decreased from 24.8 before the intervention to 18.7 after the intervention ($P < .001$). Mean monthly hand hygiene compliance rate increased significantly from 65.7% before the intervention to 87.4% after the intervention ($P < .001$). After adjusting for the number of MRSA-colonized patients on admission and hand hygiene compliance rates, a constant trend was observed from January 2013 to July 2017 (adjusted mean coefficient, 0.012; 95% CI, -0.037 to 0.06), with an immediate drop in September 2017 (adjusted mean coefficient, -2.145; 95% CI, -0.248 to -0.002; $P = .033$), followed by a significant reduction in MRSA acquisition after the intervention from September 2017 through June 2019 (adjusted mean coefficient, -0.125; 95% CI, -4.109 to -0.181; $P = .047$). **Conclusions:** Topical intranasal octenidine, coupled with universal chlorhexidine baths, can reduce MRSA acquisition in extended-care facilities. Further studies should be conducted to validate the findings in other healthcare settings.

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Investigation and Containment of New Delhi Metallo- β -Lactamase (NDM)-Producing Carbapenem-Resistant Enterobacteriaceae (CRE) in a Hospital Intensive Care Unit

Karoline Sperling, Park Nicollet Health Services, Minnesota; Amy Priddy, Park Nicollet Health Services, Minnesota; Nila Suntharam, Park Nicollet Health Services, Minnesota; Adam Karlen, Park Nicollet Health Services, Minnesota

Background: With increasing medical tourism and international healthcare, emerging multidrug resistant organisms (MDROs) or “superbugs” are becoming more prevalent. These MDROs are unique because they are resistant to antibiotics and can carry special resistance mechanisms. In April 2019, our hospital was notified that a superbug, New Delhi Metallo- β -lactamase (NDM)-producing carbapenem-resistant Enterobacteriaceae (CRE), was identified in a patient who had been transferred to another hospital after being at our hospital for 3 weeks. Our facility had a CRE admission screening protocol in place since 2013, but this patient did not meet the criteria to be screened on admission. **Methods:** The infection prevention (IP) team consulted with the Minnesota Department of Health (MDH) and gathered stakeholders to discuss containment strategies using the updated 2019 CDC Interim Guidance for Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs) to determine whether transmission to other patients had occurred. NDM CRE was classified under tier 2 organisms, meaning those primarily associated with healthcare settings and not commonly identified in the region, and we used this framework to conduct an investigation. A point-prevalence study was done in an intensive care unit that consisted of rectal screening of 7 patients for both CRE and *Candida auris*, another emerging MDRO. These swabs were sent to the Antibiotic Resistance Laboratory Network

(ARLN) Central Regional Lab at MDH for testing. An on-site infection control risk assessment was done by the MDH Infection Control Assessment and Response (ICAR) team.

Results: All 7 patients were negative for both CRE and *C. auris*, and no further screening was done. During the investigation, it was discovered that the patient had had elective ambulatory surgery outside the United States in March 2019. The ICAR team assessment provided overall positive feedback to the nursing unit about isolation procedures, cleaning products, and hand hygiene product accessibility. Opportunities included set-up of soiled utility room and updating our process to the 2019 MDH recommendation to screen patients for CRE and *C. auris* on admission who have been hospitalized, had outpatient surgery, or hemodialysis outside the United States in the previous year. **Conclusions:** Point-prevalence study results showed no transmission of CRE and highlighted the importance of standard precautions. This event supports the MDH recommendation to screen for CRE any patients who have been hospitalized, had outpatient surgery, or had hemodialysis outside the United States in the previous year.

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Investigation of a Prolonged Group A *Streptococcus* Outbreak Among Residents and Outpatients Receiving Wound Care at a Long-Term Care Facility (LTCF)

Alana Cilwick, Colorado Department of Public Health and Environment; April Burdorf, Colorado Department of Public Health and Environment; Wendy Bamberg, Medical Epidemiology Consulting; Christopher Czaja, Colorado Department of Health and Environment; Alexis Burakoff, Colorado Department of Public Health and Environment; Geoffrey Brousseau, Colorado Department of Public Health and Environment; Helen Johnston, Colorado Department of Public Health and Environment

Background: In February 2019, the Colorado Department of Public Health and Environment (CDPHE) identified a cluster of 3 invasive group A *Streptococcus* (GAS) infections in residents receiving wound care in a long-term care facility (LTCF). An investigation revealed a larger outbreak that extended to nonresidents receiving outpatient wound care at the LTCF. **Methods:** A case was defined as a positive culture for GAS *emm* type 82 from an individual with exposure to the LTCF between January and June 2019. Cases were categorized as clinical (symptoms of GAS disease or GAS isolated from a wound or sterile site) or carriage (no symptoms). Carriers were identified via samples collected from throat and skin lesions. Screening occurred in 2 rounds and included residents of affected units followed by screening of all wound-care staff and residents facility-wide. Available isolates were sent for *emm* type testing and whole-genome sequencing (WGS) at the CDC. CDPHE staff performed infection control observations. **Results:** We identified 14 cases: 8 clinical and 6 carriage (from 5 residents and 1 staff member). Two patients with invasive GAS died. Of 8 patients with clinical GAS, 6 resided in the facility on or 1 day prior to symptom onset; 2 were not residents but received outpatient therapy at the LTCF. All 8 patients with clinical GAS (100%) and 3 carriers had received wound care. The staff member with *emm* 82 carriage had provided wound care and occupational therapy to the affected residents and the 2 outpatients. Two