test (10/36 (28%) were on admission). The median incidence of HA CPE per 100,000 patient-days at each hospital was 0.44 (IQR 0.15–0.68) (P < 0.0001).

**Conclusion.** A quarter of CPE cases in southern Ontario were HA and the incidence of HA cases is increasing. Most cases were admitted to >1 Ontario hospital. Strategies to control transmission are critical.

**Disclosures.** All authors: No reported disclosures.

513. Transmission of Carbapenem-resistant Enterobacteriaceae in a Community-Based, Residential Care Setting: Nevada, 2018

Danica Gomes, MD, MSc; Ana Bardosy, MD; Andrew Gorzalski, PhD; Heather Holmstadt, RN; Sandra Larson, MPH; Alison L. Halpin, PhD; Lei Chen, PhD; Kimisha Causey, MPH; Chudima V. Nkoku, MSc; Nimalie D. Stone, MD MS; Abimbola Ogundimu, DrPH, RN, CIC; Heather Moulton-Meissner, PhD; Gillian A. McAllister, BS; Paige Gable, BS; Nick Vlachos, MS; Manoyla S. Walters, PhD; Lauren Epstein, MD MSc and Adrian Forener, BS Health Ecology 20, 2; Centers for Disease Control and Prevention, Atlanta, Georgia; 3; Nevada State Public Health Lab, Reno, New Jersey; 4; Washoe County Health District, Reno, Nevada; 5; Nevada Department of Health and Human Services, Las Vegas, Nevada; 6; Retired Epidemiology Program Manager, Washoe County Health District, Reno, Nevada; 7; Nevada Division of Public and Behavioral Health, Las Vegas, Nevada; 8; Office of Public Health Investigations and Epidemiology, Las Vegas, Nevada; 9; CDC, Atlanta, Georgia; 10; Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia; 11; Office of Public Health Informatics and Epidemiology, Las Vegas, Nevada

**Session:** 55. HAI: MDRO – GNR Transmission

**Background.** Klebsiella pneumoniae carbapenemase-producing organisms (KPCOs) are often multidrug-resistant, and the KPC resistance determinant can be transmissible between bacteria. KPCOs are associated with healthcare facility exposures; identification in community-based, residential care settings is uncommon. In September 2018, the Washoe County Health District was notified of a KPC-producing Escherichia coli from a group home (GH) resident. We investigated the source of this KPCO and evaluated transmission in the GH.

**Methods.** A case was defined as detection of KPCO from a GH resident or staff from June 1 to November 30, 2018. Staff included caregivers who provided daily care (including toileting, bathing, feeding) and visiting healthcare workers. Residents and staff were offered KPCO screening to assess colonization status. Exposures were assessed by medical record review and interviews. Genetic relatedness of KPCOs was evaluated by whole-genome sequencing (WGS). Infection prevention and control (IPC) practices were reviewed.

**Results.** Overall, six cases were identified, including the index, two of seven staff screened and three of six residents screened. Three residents with KPCOs had recent hospitalizations and shared a bathroom in the GH; one overlapped on the same hospital unit as a patient with KPC-producing Enterobacteriaceae. The Benefits of Universal Gloves and Gowns (BUGG) randomized trial found a decrease in MRSA acquisition, no effect on VRE acquisition and no increase in adverse events with the intervention of wearing gloves and gowns for all patient contact in the intensive care unit (ICU). The objective of the study was to assess whether wearing gloves and gowns for all patient contact in the ICU decreases the acquisition of antibiotic-resistant Gram-negative bacteria.

**Methods.** Design: Secondary study of the BUGG cluster-randomized trial.

**Participants:** 20 medical and surgical ICUs in 20 US hospitals.

**Intervention:** Healthcare workers were required to wear gloves and gowns when entering any patient room compared with standard care.

**Main outcomes and measures:** The primary composite outcome was acquisition of any antibiotic-resistant Gram-negative bacteria based on surveillance cultures collected on admission and discharge. Secondary outcomes were acquisition of carbapenem-resistant Acinetobacter baumannii, Pseudomonas aeruginosa, Enterobacteriaceae, or ESBL-producing Enterobacteriaceae.

**Results.** For the primary outcome, the intervention had a RR of 0.90 (95% CI 0.71 to 1.12, P = 0.34). Effects on the secondary outcomes were: carbapenem-resistant Acinetobacter baumannii, Pseudomonas aeruginosa, Enterobacteriaceae, or ESBL-producing Enterobacteriaceae.

**Conclusion.** The association of universal glove and gown use in the ICU with acquisition of antibiotic-resistant Gram-negative bacteria was inconclusive. The observed rates varied for all five outcomes suggest that the intervention was protective, however, none were statistically significant. The study was likely underpowered to detect statistical significance for the effect sizes found. Individual hospitals should consider implementing the intervention based on the importance of these organisms at their hospital, effect sizes, confidence intervals, and cost.

**Disclosures.** All authors: No reported disclosures.

514. Shedding of Multidrug-Resistant Gram-Negative Bacilli by Colonized Patients During Procedures and Patient Care Activities

Heba Alhimdi, MD; Jennifer Cadnum, BS; Annette Jencson, MT, CIC; Robert A. Bonomo, MD; Brigid Wilson, PhD; Jeanmarie Mayer, MD; Matthew H. Samore, MD and Curtis Donskey, MD; 1; Northeast Ohio VA Healthcare System, Cleveland, Ohio; 2; Louis Stokes Cleveland Veterans Affairs Medical Center, Cleveland, Ohio; 3; University of Utah School of Medicine, Sandy, Utah; 4; University of Utah, Salt Lake City; Utah; 5; Cleveland VA Medical Center, Cleveland, Ohio

**Session:** 55. HAI: MDRO – GNR Transmission

**Background.** Contaminated environmental surfaces contribute to transmission of healthcare-associated pathogens such as multidrug-resistant gram-negative bacilli. We hypothesized that medical procedures and patient care activities facilitate environmental dissemination of multidrug-resistant gram-negative bacilli in hospitalized patients.

**Methods.** We conducted a cohort study of hospitalized patients in contact precautions for carriage of extended spectrum β-lactamase (ESBL)-producing or carbapenem-resistant gram-negative bacilli (CR-GNB) to determine the frequency of environmental shedding during procedures and care activities. Periurethral, wound, and skin were cultured for the gram-negative bacillus of interest. Prior to each procedure or activity, surfaces in the room and portable equipment used for procedures were disinfected. After procedures, high-touch surfaces and portable equipment were cultured; negative control cultures were collected after 1 hour in the absence of a procedure.

**Results.** Of 60 participants, 38 (63%) were in contact precautions for ESBL-producing or CR-GNB. Thirty-four (57%) participants had positive periurethral, wound, or skin cultures. Contamination of surfaces with the colonizing multidrug-resistant gram-negative bacilli occurred frequently during procedures and activities such as wound care, assistance with meals, and urinary catheter or colostomy care (11% to 29% of procedures/activities), whereas contamination was rare in the absence of a procedure (1%). Contamination was recovered from 6 of 56 (10%) portable devices used for procedures.

**Conclusion.** Environmental shedding of multidrug-resistant gram-negative bacilli occurs frequently during medical and non-medical procedures in hospitalized patients. Our results suggest that there is a need for effective strategies to disinfect surfaces and equipment after procedures.

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516. Social Network Analysis to Study MDRO Transmission in VA Community Living Centers and Spinal Cord Injury Units

Stetlana Bondar, MPH\textsuperscript{1}; Tola Ewers, MS, PhD\textsuperscript{1}; Amanda Vivo, MPH\textsuperscript{1}; Marissa Gutkowski, MPH\textsuperscript{1}; Charleneika T. Evans, PhD, MPH\textsuperscript{1}; ESL. Peremecz, BM\textsuperscript{2}; and Christopher Cribb, MD PhD\textsuperscript{2}; University of Wisconsin-Madison, Madison, Wisconsin; \textsuperscript{3}University of Wisconsin-Madison School of Medicine and Public Health, Madison, Wisconsin; \textsuperscript{4}CINCCH at Hines VA, Hines, Illinois; \textsuperscript{5}Veteran Affairs, Hines, Illinois; \textsuperscript{6}Northwestern University and VA, Hines, Illinois; \textsuperscript{7}University of Iowa Carver College of Medicine, Iowa City, Iowa; \textsuperscript{8}University of Wisconsin, Madison, Wisconsin

Session: 55. HAI: MDRO – GNR Transmission
Thursday, October 3, 2019: 12:15 PM

Background. Residents of VA Community Living Centers (CLC) and Spinal Cord Injury units (SCI) are commonly colonized or infected with multidrug-resistant organisms (MDROs). The mechanisms by which MDROs are spread between residents in CLC/SCI settings remain poorly understood. Our objective was to develop methods to better understand how MDROs are spread in VA CLC/SCIs.

Methods. Preliminary data from two of the four VA medical centers participating in an ongoing study are included in these analyses. A structured sociometric survey was employed to collect data on interactions between residents, staff, and environmental surfaces in study units. UCINET was used to construct a sociogram and calculate network characteristics (density, centrality) using responses to the surveys administered in one of the participating facilities.

Results. A total of 136 surveys were completed by 49 staff and 45 residents at the two VA sites. Staff reported more interactions with residents than with other staff. Residents reported more interactions with staff than with other residents, the latter tending to only occur during group activities. Sociograms generated from preliminary surveys collected at one site suggest a four-core-person social network pattern connecting two staff with two specific residents and showed that the dining room was the group setting most frequently visited by residents. Mobile computers, blood pressure cuffs/thermometers and glucometers were the equipment most heavily during resident care activities (figure). Challenges in identifying contact patterns include recall bias and inability of some residents to identify names of individuals with whom they interacted. Residents were still able to reliably identify staff roles.

Conclusion. This preliminary work shows heterogeneous contact patterns between persons and surfaces in VA CLC/SCIs. Characterizing this heterogeneity and its influence on MDRO spread via this type of social network analysis is feasible in the VA CLC/SCI setting, albeit with some limitations. Next steps in our studies include adding data from two additional sites and using observation techniques supplemented with microbiological sampling of targeted environmental surfaces to further understand potential transmission patterns.

Disclosures. All authors: No reported disclosures.

517. Treatment Patterns of Hospitalized Adults with Infections Due to Carbapenem Non-Susceptible Gram-Negative Organisms in a Large Electronic Health Record Database in the United States

Tanya Burton, PhD\textsuperscript{1}; Amy Anderson, MS\textsuperscript{2}; Jefferey Seare, MD\textsuperscript{1}; Ryan J. Dillon, MSc\textsuperscript{3} and Eilish McCann, PhD\textsuperscript{3}; Optum, Boston, Massachusetts; \textsuperscript{4}Merck & Co., Inc., Kenilworth, New Jersey; \textsuperscript{5}Merck & Co., Inc., Kenilworth, New Jersey

Session: 56. HAI: MDRO – GNR Treatment
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Background. Infections caused by carbapenem non-susceptible (C-NS) Gram-negative (GN) organisms pose a major threat, due in part to limited treatment options. The aim of this study was to assess treatment patterns for these infections in a large US electronic health record database.

Methods. A retrospective cohort study of hospitalized adults with complicated intra-abdominal infection (cIAI), complicated urinary tract infection (cUTI), bacterial pneumonia (BP), or bacteremia (BAC) due to C-NS (resistant/intermediate susceptibility to carbapenem) GN organisms from January 2013 to March 2018. Patients with inherently C-NS organisms (e.g., Pseudomonas aeruginosa to eraptapenem) were only included if resistance to another carbapenem was identified. The index date was the date of first C-NS culture in a qualifying hospitalization (±3 days from admission/discharge). Clinical characteristics and administered treatments were assessed from admission to discharge with variables summarized descriptively and stratified by infection type.

Results. 7,702 patients met inclusion criteria: 31% cUTI ± BAC, 24% BP ± BAC, 21% cUTI ± BP ± BAC, 17% cIAI ± BAC, cUTI, or BP, 7% BAC only. The median age was 66 years, ranging from 60 (BAC) to 69 (cUTI) years; male, 57%. The most common pathogens were Pseudomonas aeruginosa (64%) and Klebsiella pneumoniae (15%). Antibiotics were administered to the majority of patients (87%); of which, 79% received combination therapy (median classes: 3, maximum: 7), the remainder received monotherapy. For antibiotic-treated patients, 93% initiated an antibiotic before the non-susceptibility status of the underlying organism was known. The most common classes given during the index hospitalization were: penicillin (49%), fluoroquinolone (44%), carbapenem (40%), cephalosporin (39%), aminoglycoside (28%) (by infection type, figure). Eleven percent of patients received colistin/polymyxin B.

Conclusion. Varied antibiotic use was observed in this cohort, with carbapenems frequently detected despite the C-NS nature of the underlying GN organisms. The use of antibiotics to which organisms are non-susceptible could lead to poor health outcomes, supporting the need for new targeted therapies to treat C-NS infections.

Disclosures. All authors: No reported disclosures.

518. Comparing the Mortality of Carbapenemase-Producing and Non-Carbapenemase-Producing Carbapenem-Resistant Enterobacteriaceae Bacteremia

Hyoenji Seo, MD\textsuperscript{1}; Eummi Yang, MD\textsuperscript{2}; Seongman Bae, MD\textsuperscript{3}; Hyemin Chung, MD\textsuperscript{4}; Eunbeek Cho, MD\textsuperscript{5}; Sang-Oh Lee, MD\textsuperscript{6}; Sang Ho Choi, MD\textsuperscript{7}; Yang Soo Kim, MD\textsuperscript{2}; Sung Han Kim, MD\textsuperscript{2}; Jun Hee Woo, PhD\textsuperscript{2}; Jiwon Jung, MD\textsuperscript{2}; Min Jae Kim, MD\textsuperscript{2}; Heungsup Sung, PhD\textsuperscript{2}; Mi Na Kim, PhD\textsuperscript{1}; Su Jin Park, Doctor\textsuperscript{1} and Yong Pil Chong, MD\textsuperscript{1}; Asan Medical Center, Songpa-gu, Seoul, South Korea; Republic of Korea; \textsuperscript{2}Center for Antimicrobial Resistance and Microbial Genetics, Seoul, Seoul-t'ukpyolsi, Republic of Korea

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