Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Surveillance

Carbapenemase-Producing Enterobacteriaceae detected in a Large Canadian Tertiary Care Hospital: Five-year retrospective study

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Background: The prevalence of carbapenemase-producing Enterobacteriaceae (CPE) is increasing worldwide. In Canada, where rates of healthcare-associated (HA) transmission of CPE remains relatively low, there is a need to share early experience of universal screening programs and risk factors for HA acquisition. **Method:** In 2018, universal screening was introduced throughout our large Canadian tertiary care hospital across, all critical care and oncology units. Additionally, risk-factor based screening was applied in all other inpatient units, with further targeted screening of roommate exposures or all inpatients on unit following identification of a single HA case. A retrospective cohort study was carried out on CPE cases detected between January 2018 and December 2023. We assessed the proportion of HA CPE cases, defined as CPE identified in patients with prior admission to our facility or after >72 hours after admission. HA cases were examined for relevant risk factors, including known roommate with CPE, the presence of other CPE on the unit, exposure to outbreak units, prior travel history, travel by a family member, and antibiotic exposure within the past 90 days. **Result:** A total of 150 CPE cases were identified, with 66 (44%) classified as HA. Among these HA cases, 14 (21%) were associated with presence of known case on the unit. The remaining 52 (79%) represented sporadic nosocomial cases without a known exposure or further transmission on the unit. Upon further retrospective review, 6 (9.2%) HA cases had documented travel history or exposure to a family member with recent travel to China, India, Sri Lanka, or the United States within the past year. Nearly all HA cases (62, 95.4%) had antibiotic exposure within 90 days of CPE detection; specifically, 47 (72.3%) received beta-lactams, 42 (64.6%) cephalosporin, 25 (38.5%) glycopeptide, 20 (30.8%) carbapenem, and 8 (12.3%) macrolide. **Conclusion:** HA CPE acquisition identified during the first 5-years of universal screening were mostly sporadic and not associated with known exposures or other risk factors. Receipt of prior antibiotics was present in nearly all cases.

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From Swiffers to Solutions: The Impact of Environmental Sampling in the Veterinary Medical Center at OSU

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Background: In 2018, the Ohio State University College of Veterinary Medicine (OSU CVM) implemented an Antimicrobial Stewardship Program, central to which was the integration of an environmental surveillance (ES) program. The ES focuses on pathogens recognized as urgent threats to public health by the Centers for Disease Control and Prevention. The pathogens currently targeted include carbapenemase-producing Enterobacterales (CPE), Salmonella spp., methicillin-resistant Staphylococcus spp. (MRSs), vancomycin resistant Enterococcus spp., and enrofloxacin resistant Pseudomonas aeruginosa. Identification of these pathogens allows the hospital to be aware of the local environmental microflora which can act as a sentinel for disease in the hospital, potentially causing healthcare associated infections. Therefore, the objective of this program is to identify resistant bacterial pathogens, characterize their resistance profiles, analyze prevalence patterns, and initiate infection control interventions where needed in the OSU VMC. **Method:** From January 2018 through December 2023, a total of 5449 samples were collected from approximately 86 locations across the OSU VMC encompassing the small animal, equine, and farm animal sections. A majority (64%, n=3561) of samples were collected from the small animal hospital, with the farm animal section contributing 1055 samples and the equine section 899. Areas sampled were frequented by both humans and animals, as well as surfaces exclusively touched by humans. Samples were collected using Swiffers® and processed through selective culture media. **Result:** Approximately half (52%, n=2890) of the samples collected represented human-touch only surfaces. A total of 3794 bacterial isolates were recovered, with an overall low prevalence for all targeted pathogens. Prevalence of CPE was 2% (n=103), with Enterobacter species being the most common. Recovery of MRSs was 8.5% (n=464) and Salmonella species was 1% (n=47). **Conclusion:** Through this initiative, the equine division of the OSU VMC collaborated with the antimicrobial stewardship team to enhance their Salmonella fecal and ES practices. In 2019, ES was critical in identifying persistent CPE and extended-spectrum cephalosporin-resistant Enterobacteriaceae in the ICU and surrounding areas of the small animal hospital. Effective measures were taken to halt the spread of ESC among patients and eliminate CPE in the environment. With the discovery of a new CPE in early 2023 in the small animal ICU and nearby areas, the program initiated targeted ES and cleaning and disinfection protocols, to identify contaminated areas and control disease transmission. These efforts have increased patient safety, health, and well-being, demonstrating how ES can be an important tool for infection control and prevention in veterinary settings.

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An "Epic" Journey to Improve Antimicrobial Stewardship

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Background: Antimicrobial stewardship programs rely heavily on the electronic medical record (EMR) to carry out daily activities, make interventions, optimize patient care, and collect data. In 2019 the University of Vermont Medical Center transitioned from using a third party platform to the Epic (Verona, WI, www.epic.com) Bugsy module for antimicrobial stewardship. **Method:** We have spent the past 4 years optimizing the Epic foundation to match our institutional antimicrobial prescribing guidelines, susceptibility patterns, and build reports to extract actionable data. **Result:** During the build process, we readily identified three areas needed for customization: (1) Empiric, definitive, and prophylactic indications of use for all antimicrobials based on our hospital's internally published books "Guide to Antimicrobial Therapy for Adults" and "Guide to Antimicrobial Therapy for Pediatrics" (figure 1); (2) An on-demand report to capture all patients with new administrations of antimicrobials in the preceding 72 hours, that includes