2466. What’s Lurking in the Drain? Serial transmission of NDM-1 Klebsiella pneumoniae to patients admitted 9 months apart to the same ICU room

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Background. We evaluated the role of an in-room sink in NDM-1 K. pneumoniae (NDMKP) transmission.

Methods. In October 2017, Infection Prevention (IP) initiated weekly point prevalence rectal screening cultures in 4 ICUs. In 3/2018, IP launched an epidemiologic and environmental investigation following identification of a patient with NDMKP rectal colonization. Environmental samples including swabs of biofilm from drain and water from p-traps were obtained from the in-room sink. Illumina whole-genome sequencing (WGS) was performed on all NDMKP patient and environmental isolates. Single nucleotide variants (SNVs) were identified against the reference Klebsiella pneumoniae strain MLST15 (NZ_CP002217), and isolates within 150 SNVs of each other were considered to be genomically related.

Results. Two patients were identified with NDMKP infection or colonization between 2017 and 2018. One patient had prolonged hospitalization and developed NDMKP bacteraemia on hospital day (HD) 30. Approximately 9 months later, the second patient was admitted to the same ICU room that had been occupied by the index patient for 13 days and was identified to have NDMKP rectal colonization on HD 55. Environmental samples from the in-room sink of the ICU room grew NDMKP. WGS demonstrated relatedness between NDMKP isolates from the 2 patients (112 SNV), the index patient and the sink (52 SNV), and the second patient and the sink (80 SNV). The in-room sink was replaced in 4/18 and no further cases of NDMKP infection or colonization have been identified at DUR in over 12 months.

Conclusion. We report an NDM-1 K. pneumoniae transmission event possibly related to a contaminated in-room sink drain. Remarkably, 9 months elapsed between the index case and the second case, with no additional interim cases detected on weekly point-prevalence screening or clinical cultures. The long duration of time between the index patient, secondary case, and sink culture may explain why WGS showed relatedness but not identical clones. Education around sink use, design, and more effective cleaning strategies are needed to mitigate environment-to-patient transmission of CRE.

Disclosures. All authors: No reported disclosures.

2467. Inferring Strain Type Attribution from Antibiotic Resistance Profiles among E. coli Causing Healthcare-Associated Infections in the United States, 2013–2017

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Background. E. coli is a leading cause of healthcare-associated infections (HAIs) and hospital-acquired infections (HAI). We report an NDM-K pneumoniae transmission event possibly related to a contaminated in-room sink drain. Remarkably, 9 months elapsed between the index case and the second case, with no additional interim cases detected on weekly point-prevalence screening or clinical cultures. The long duration of time between the index patient, secondary case, and sink culture may explain why WGS showed relatedness but not identical clones. Education around sink use, design, and more effective cleaning strategies are needed to mitigate environment-to-patient transmission of CRE.

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2469. A National Intervention to Improve Infection Prevention Efforts in Hospitals with High Rates of Clostridioides difficile infection, Central Line-Associated Bloodstream Infection, and/or Methicillin-Resistant Staphylococcus aureus

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Background. To strengthen state collaborative efforts and reduce common healthcare-associated infections (HAI) in short-stay and long-term acute care hospitals, the Centers for Disease Control and Prevention (CDC) launched “States Targeting Reduction in Infections via Engagement” (STRIVE) - a national quality improvement program.

Methods. STRIVE consisted of a multimodal intervention implemented from November 2016 to May 2018 (Figure 1). Hospitals with excess Clostridioides difficile infection (CDI) and a high burden of at least one of the following HAIs - central line-associated bloodstream infection (CLABSI), catheter-associated urinary tract infection (CAUTI) or methicillin-resistant Staphylococcus aureus (MRSA) bloodstream infection were targeted. Monthly aggregate HAI and device utilization ratios - according to CDC National Healthcare Safety Network definitions - were measured during the pre vs. post-intervention periods. Thematic analysis of qualitative interviews with state partners was conducted to understand the influence of the intervention.

Results. Overall, 387 hospitals from 23 states and the District of Columbia participated. Changes in HAI rates and catheter utilization are illustrated in Figure 2. From pre- to post-intervention, substantial changes in HAI rates above temporal trends were not observed (CDI, 5.7 per 1000 patient-days; CLABSI, 0.88 per 1000 device-days; CAUTI, 1.5 to 1.04 per 1000 catheter days; MRSA type, infection rates, and clinical outcomes may inform targeted prevention strategies at the local/regional level.

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