processes. To address this gap, we are examining HH and PPE adherence at critical and contaminating moments in LTCFs. **Methods:** We conducted ethnographic observations of HCP's processes of care in 2 LTCFs in Iowa to examine HH and PPE adherence during contaminating tasks in resident care sequences. We captured care observations and additional data on topics related to our study focus (e.g., unit/room layouts, PPE storage, facility policies/procedures) in field notes. We transcribed and imported fieldnotes into MAXQDA qualitative data management software and analyzed the data using a combined deductive-inductive coding approach. **Results:** Between 1/2023-7/2023, we observed 60 (30 per facility) care episodes. Most observations included toileting activities and perineal care during which HCP would be expected to use gloves and/or do HH. Most HCP appropriately donned/doffed gloves and practiced HH at key moments (e.g., before clean/aseptic procedures, after perineal care), but were less compliant before/after touching residents' clothing or bare skin during these activities. In addition, some held soiled items next to their scrubs between tasks, which could contaminate their clothing and arms and could facilitate transmission of pathogens to other residents. Moreover, HCP's interactions with floors emerged inductively as a topic of interest during our observations and preliminary analyses. We observed HCP interact with the floor during these activities in ways that could increase risk of pathogen transmission. HCP frequently dropped soiled towels or wipes used in perineal care onto the floor during tasks for later pick up. HCP also moved or placed trash bags containing soiled or contaminated items on the floor. HCP routinely knelt on, sat on, or touched their hands on the same floor when talking with residents, helping residents change clothes or diapers, changing bedding, or adjusting wheelchair footpads. In one case, the HCP picked up clean towels that fell to the floor near soiled towels and then used the "clean towels" in resident perineal care. **Conclusion:** Despite practicing HH and appropriate PPE use, HCP in LTCFs may increase the risk of pathogen transmission unintentionally through their interactions with soiled items and the environment, including floors. Given the nature of resident care in LTCFs, HCP in LTCF may be more likely than HCP in acute care settings to interact with contaminated floors.

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Risk Factors for Multi-Drug Resistant Gram-negative Infections across a Pediatric Hospital System

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Background: Infections due to antibiotic resistant bacteria are increasing worldwide and while, the epidemiology of these pathogens is well described in adults, pediatric specific data are lacking. We sought to gain an understanding of the risk factors for multi-drug resistant Gram-negative (MDRGN) infections in our pediatric population. **Methods:** We performed a retrospective review of pediatric patients seen at a pediatric hospital system in 2022 who had a culture-positive MDRGN, which was defined as a gram-negative bacteria resistant or intermediate to at least 1 antibiotic in ≥ 3 antibiotic groups. Repeat positive cultures for the same MDRGN were considered a single infection episode if occurring within a 14-day period. Demographic, clinical, and microbiologic data was obtained from the electronic medical record. Fisher's exact was used for analysis. **Results:** One hundred and seventy-nine children had 237 infection episodes during the study period. Eighty-one patients (45%) were male and the median age was 5.3 years. The most prevalent MDRGNs included: Escherichia coli (154, 65%), Klebsiella spp (52, 22%), and Enterobacter spp (16, 7%). Escherichia coli was significantly more likely than other pathogens to be isolated from the urine (P = 0.008). Compared to multi-drug resistant E. coli, patients with a non-E. coli MDRGN were significantly more likely to have an underlying medical condition, recent hospitalization and antibiotic use (P≤0.001 for each, Table 1). A carbapenem was administered in 32% (75/237) of infection episodes. There were only 6 carbapenem resistant organisms. **Conclusions:** In our study, E. coli was the most frequent MDRGN. Most patients with a non-E. coli MDRGN infection episode had an underlying medical condition, recent hospitalization and antibiotic use. Carbapenem resistance was infrequent, though surveillance studies are needed to identify changing antibiotic resistance patterns and to direct prevention measures.

Table 1. Comparison of risk factors for multi-drug resistant Gram-negative infections by pathogen type

Characteristic	MDR *Escherichia coli* infections N=154 (%)	All other MDRGN infections N=83 (%)	*P*
Underlying medical condition	110 (71)	83 (100)	**<0.001**
Prematurity (<37 weeks gestational age)	21 (14)	20 (24)	**0.049**
Immunocompromised*	19 (12)	12 (14)	0.69
Presence of a central line, tracheostomy, or gastrostomy tube	76 (49)	73 (88)	**<0.001**
Previous**: Hospitalization	84 (55)	72 (87)	**<0.001**
Outpatient visit	123 (80)	63 (76)	0.51
Antibiotic use	100 (65)	77 (94)	**<0.001**
Carbapenem use	28 (18)	21 (26)	0.18

Significant *P*-values are bolded
*Includes oncology, bone marrow and solid organ transplant patients
**Within the preceding 6 months

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A Retrospective Case Series of Stenotrophomonas maltophilia at an Acute Care Hospital in Alabama, July-November 2023

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Background: In August 2023, an infection preventionist at an acute care hospital in Alabama recognized an increase in cases of Stenotrophomonas maltophilia, which is an emerging pathogen in clinical settings worldwide. It was not until the facility identified the pathogen in their water system in October that it was reported to ADPH as an outbreak. The outbreak investigation was brief due to the hospital's rapid containment response and adherence to its established water management program (WMP). As a result of inappropriate antibiotic use in hospitals, pan-resistant strains have been increasing at an alarming rate. The pathogen can employ water used in hospital settings to cause a variety of nosocomial infections, including those found in the blood, respiratory tract, urinary tract, and on the skin. Hospitalized patients, especially those with immunocompromising conditions or implanted medical devices, are at increased risk of significant morbidity and mortality. The aim of this study was to better understand the clinical and demographic characteristics of the 13 case-patients identified during this investigation. **Methods:** A retrospective case series was conducted by reviewing medical records for case-patients with culture-confirmed S. maltophilia admitted between July and November. The CDC Healthcare-Associated Infection Outbreak Investigation Abstraction Form was used to systematically collect details about each case-patient's hospitalization and course of illness. A Gantt chart was developed in Microsoft Excel to illustrate key events during their hospitalization.

Results: Of the 13 case-patients, 69% were male and the median age was 69 years (range: 30 to 77). All S. maltophilia infections were hospital-acquired (>3 days after admission) with 92% being respiratory and 46% resistant to more than one class of antibiotics. All case-patients were admitted to the ICU and had known risk factors associated with developing S. maltophilia infection, including intubation (100%) and receiving antibiotic therapy prior to infection (77%). Other major risk factors included invasive surgery (77%), co-infections (77%), chronic respiratory disease (62%), hypertension (54%), and renal failure (31%). All were severely immunocompromised. Forty-six percent of the case-patients died from complications associated with their illness. **Conclusion:** This is the first S. maltophilia outbreak reported in Alabama. The findings of this case series underscored the importance of employing strict infection prevention measures to reduce poor health outcomes and how strong antibiotic stewardship programs are needed to limit transmission among vulnerable patient populations in these settings. It is recommended that hospitals conduct routine environmental sampling and have a WMP that is effective in limiting S. maltophilia.

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Whole Genome Sequencing to Identify Multiple Clusters of Carbapenemase-Producing Enterobacterales Cases – Colorado, 2022-2023

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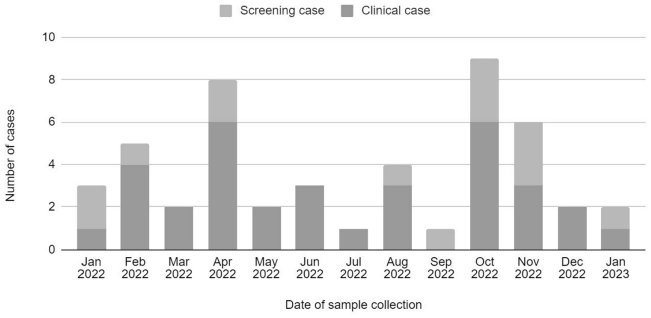
Background: The Colorado Department of Public Health and Environment (CDPHE) detected an increase in Klebsiella pneumoniae carbapenemase-producing carbapenem-resistant Enterobacterales (KPC-CRE) infections in October 2022. We investigated patient epidemiological links and isolate relatedness to characterize interfacility transmission of KPC-CRE in the Denver metro area and inform regional prevention strategies. **Methods:** We defined a case as polymerase chain reaction detection of KPC from clinical or screening specimens collected during January 2022 – January 2023. Cases were identified through statewide CRE surveillance and carbapenemase testing at the CDPHE laboratory and counted once within a 30-day period. Medical records were reviewed to identify healthcare facility admissions and patient facility overlap in the 12 months prior to sample collection. Whole genome sequencing (WGS) was performed for 34 patients with available KPC-CRE isolates using short- and long-read sequencing techniques. We performed multi-locus sequence typing, generated genome phylogenetic trees, and compared plasmid contig sequences to identify relatedness between KPC-CRE isolates. Clusters were defined as ≥2 genetically related isolates of the same organism or carbapenemase plasmid, from different patients. **Results:** We identified 48 cases (34 clinical and 14 screening) among 39 patients (figure). Patients had a mean age of 52 years (range 16-86) and median of three healthcare facility admissions (range 1-14). Twenty-eight patients (72%) were male. We identified 16 (41%) patients with epidemiological links to one acute care hospital (ACH), 11 (28.2%) patients to one long-term acute care hospital (LTACH), and four (10.2%) patients to each of two ventilator-capable skilled nursing facilities (vSNF). Five distinct clusters of

Klebsiella pneumoniae carbapenemase-producing carbapenem-resistant Enterobacterales -- Colorado, January 2022-January 2023



KPC-CRE were identified by WGS among 23 patients (E. hormaechei, two distinct E. cloacae clusters, K. pneumoniae, and K. oxytoca) with linkages to ten healthcare facilities, including two vSNFs, two LTACHs, and six ACHs. Three distinct KPC genes were identified among the clusters: KPC-2, KPC-3, and KPC-4. Genomes assembled from long reads identified identical or similar KPC-gene-containing plasmids across different species or sequence types, suggesting horizontal gene transfer of KPC. **Conclusions:** Multiple KPC-CRE strains co-circulated and were associated with patient movement between acute and post-acute care settings. WGS allowed us to identify multi-facility clusters. Time and location of carbapenemase acquisition were challenging to determine for genetically related isolates when epidemiologic links could not be determined from medical records. This could be due to undetected cases. We notified healthcare facilities of their shared transmission risk and advocated for improved attention to infection control, carbapenemase screening, and communication upon patient transfer.

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Evaluation of Practice Changes in Therapy for Stenotrophomonas maltophilia

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Background: Stenotrophomonas maltophilia (SM) is a non-fermenting, Gram-negative bacillus. Its intrinsic resistance to many beta-lactams makes for challenging treatment decisions. A preprint of the latest Infectious Diseases Society of America (IDSA) guidance on managing SM infections was published in December 2022 providing a recommendation for combination therapy including trimethoprim/sulfamethoxazole (TMP/SMX) and a second agent. An evaluation of the impact on SM treatment practices following this guidance was conducted at our institution. **Methods:** A list of 130 patients with non-urine SM cultures from December 2021-August 2023 was generated using a pharmacovigilance platform. Patients were excluded if on comfort measures or discharged to hospice prior to therapy completion, no directed antibiotics were given, or any history of prior SM infection. Twenty-five patients were randomly selected from the pre- and post-guidance periods (before and one month after December 1, 2022) for a total of 50 patients. Data was collected via manual chart review. The primary endpoint was frequency of combination antibiotic therapy in each time period. Secondary endpoints included treatment success (defined as resolution of infection symptoms and lack of infection recurrence), in-hospital mortality, 30-day mortality, and 30-day infection recurrence. **Results:** Overall, baseline characteristics were similar between groups, the median age was 65 years, 64% of patients were male, 20% were immunocompromised based on prespecified criteria, the