Presentation Type:
Poster Presentation
Subject Category: Infection Control
Comparison of Infection Risks Between Intravenous and Subcutaneous Treprostinil in Patients with Pulmonary Hypertension
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Background: Treprostinil, a prostacyclin analog, is used to manage pulmonary hypertension (PH) through continuous intravenous (IV) infusion via a central venous catheter (CVC) or continuous subcutaneous (SC) infusion via a small infusion pump connected to a catheter. This study compares the incidence and the types of infections between IV and SC administration in a single-center cohort. **Methods:** We analyzed 49 PAH patients receiving treprostinil at the Hartford Hospital PH Center, all managed under standardized hygiene protocols by the same healthcare team. Of these, 34 received IV administration and 15 SC, based on patient preference and PH specialist recommendations. The primary outcome was the incidence of infection in each group during the study period. The secondary outcome was the type of infection, including bacteremia, cellulitis, or other skin infections, associated with IV or SC administration. **Results:** The incidence of bacteremia was significantly higher in the IV group, with 7 cases (5 isolated bacteremia and 2 bacteremia with cellulitis), representing 20.6%. In contrast, there were no bacteremia cases in the SC group. Cellulitis was more common in the SC group (20%; 3 out of 15 patients) compared to the IV group (8.8%; 3 out of 34 patients). Notably, 2 cases of cellulitis in the IV group were associated with bacteremia, while all 3 cases in the SC group were isolated, with 1 progressing to an abscess requiring incision and drainage. The overall infection rate (bacteremia and cellulitis combined) was higher in the IV group (29.4%) compared to the SC group (20%). These findings emphasize the higher risk of bacteremia in the IV group and reveal that while cellulitis occurred more frequently in the SC group, the overall infection burden was greater in the IV group. **Conclusion:** Previous studies show comparable efficacy between IV and SC remodulin when properly dosed. Our findings, despite a small sample size, reveal a higher overall risk of infections, particularly bloodstream infections (BSIs), with IV therapy due to CVC use. This aligns with existing literature identifying catheter-related infections as a key concern. These results support SC remodulin as a safer option, especially for reducing BSI risk. We plan to incorporate these findings into our counseling protocol, acknowledging the need for further validation.

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	Total Patients	Bacteremia Alone	Bacteremia with Cellulitis	Cellulitis	Total Infections
IV Group (n=34)	34	5 (14.7%)	2 (5.9%)	3 (8.8%)	10 (29.4%)
SC Group (n=15)	15	0 (0%)	0 (0%)	3 (20%)	3 (20%)

Presentation Type:
Poster Presentation
Subject Category: COVID-19
Using Oxford Nanopore Sequencing to Investigate Potential Plasmid Transmission of the blaNDM-5 Gene
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Background: The transmission of plasmids carrying antimicrobial resistance (AMR) genes between patients poses a significant global health challenge. The New Delhi metallo-β-lactamase (NDM) carbapenemase is associated with high mortality and limited therapeutics. Traditional Infection Control surveillance for intra-institutional organisms carrying AMR genes relies on retrospective clinical and epidemiologic review. Whole-genome sequencing (WGS) has been utilized to detect outbreaks, including those not clinically apparent within healthcare settings. In this study, we sought to identify related NDM-carrying Escherichia coli using WGS. **Method:** NDM-carrying E. coli isolates in clinical cultures were identified between November 2023 and October 2024. Bacterial genomic DNA was extracted directly from clinical microbiology laboratory plates. Sequencing was performed using the Oxford Nanopore Technologies MinION platform with an R10.4.1 flow cell. Assembled FASTA files from the in-house Flyest pipeline were analyzed with AMRFinderPlus to detect AMR genes. Plasmid replicons were identified using staramr. Horizontal plasmid transfer annotation was conducted using Roary, which incorporates Prokka, and pairwise single nucleotide polymorphism distances were assessed with snps-dist. **Results:** Nine E. coli strains producing blaNDM-5 were identified from eight patients. Two isolates from one patient showed high genetic similarity, indicating they were likely the same strain. The identified sequence types (STs) were ST361 (4 strains), ST167 (3 strains), ST205 (1 strain), and ST405 (1 strain). Four strains harbored a hybrid IncFIA/IncFIB(AP001918) plasmid, demonstrating 99.8%–99.9% nucleotide similarity. This plasmid carried blaNDM-5, blaCTX-M-15, blaOXA-1, and efflux pump-related genes, contributing to multidrug resistance. Despite the high plasmid similarity, no obvious epidemiological links, such as overlapping patient admissions or common procedures, were identified among the four patients carrying this hybrid plasmid. **Conclusion:** WGS presents a novel modality to identify highly genetically related strains of organisms within a healthcare institution that may reflect silent outbreaks or AMR dissemination not detected by conventional Infection Control methods.

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Subject Category: Infections in Immunocompromised Patients
Hospital Acquired Bacteremia in Vulnerable Patient Populations: A Deeper Dive Into Risk and Treatment Considerations
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Background: Immunocompromised patients are at an increased risk of infections. With the introduction of the new Hospital Onset Bacteremia and Fungemia (HOB) quality metric, it remains uncertain whether the incidence would be higher within these vulnerable populations. Additionally, the rate of antimicrobial resistance (AMR), which complicates the infection management, is not completely understood. We aim to provide insights into the incidence of HOB in cancer, transplant and surgical patients as well as challenges posed by AMR. **Method:** Data from three multi-center retrospective studies are included: 1. Adult patients in 38 US hospitals between October 2015 and June 2019 with a procedure under the National Healthcare Safety Network (NHSN) surveillance for SSI to assess the incidence of SSI and SSI-HOB co-occurrence; 2. Adult patients in 41 US hospitals between October 2015 and June 2019 with DRG for myeloproliferative (MP) cancer, solid tumor cancer, transplant, and non-cancer/non-transplant ("reference group") to quantify their association with HOB; 3. Evaluation of adult patients in 168 hospitals between April 2018 and December 2022 to assess the rate of AMR pathogens and the proportion of AMR among bacterial isolates in patients with and without cancer. **Results:** 1.Rate of hospital-reported SSI was 0.15 per 100 admissions and admissions with SSI had significantly higher incremental cost ($30,689) and length of stay (LOS) (11.6 days); further, the incidence of HOB was 6-fold higher in admissions with SSI and SSI admissions with

HOB resulted in additional $24,586 to cost of care and 6.3 days to the LOS; 2. Rate of HOB in MP cancer was 2-7-fold higher and 57% to 4-fold higher in transplant patients compared to the reference group, depending on LOS. There were no statistically significant differences in the risk of HOB between solid tumor cancer and the reference; 3. AMR pathogen rates were higher in cancer patients than patients without cancer for most pathogen groups, including vancomycin-resistant enterococci (IRR 1.95), extended-spectrum beta-lactamase (ESBL) producers (IRR, 1.48), carbapenem-non-susceptible Enterobacterales (IRR, 1.46) and multidrug-resistant Pseudomonas aeruginosa (IRR, 1.31). The percentage of nonsusceptible isolates in most pathogen groups was lower in patients with cancer versus without cancer except for ESBL producers among Enterobacterales and vancomycin resistance among enterococci, which were higher in cancer patients. **Conclusion:** Certain vulnerable patient populations were found to be at greater risk of HOB including those with SSI, MP cancer and transplant patients. The higher incidence of AMR in cancer patients further complicates management of high-risk infections.

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Evaluation of Daily Surveillance Blood Cultures During Continuous Renal Replacement Therapy in a Diverse Immunocompromised Population
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Background: Immunocompromised patients in the ICU are at high risk of infection. Continuous renal replacement therapy (CRRT) masks fevers. At an institution where one blood culture is routinely obtained daily during CRRT, we evaluated the incidence of positive blood cultures during CRRT. **Methods:** All patients admitted to the NIH Clinical Center receiving CRRT from September 2016 to March 2023 were identified. Charts were abstracted for baseline covariates, laboratory values, microbiology, CRRT days, antimicrobial administration, and mortality. **Results:** A total of 111 patients received CRRT. Ninety-seven (87.4%) had at least one blood culture drawn. Mean age was 43.3 ± 15.8 years and 39 (35.1%) were female. Seventy-four (66.7%) had an underlying malignancy, 36 (32.4%) were neutropenic on CRRT initiation, 32 (28.8%) were post-hematopoietic cell transplant and 9 (8.1%) were post-CAR-T cell therapy. Median CRRT duration was 7 days (IQR 3-16.5). There were 41 separate positive blood culture events, each possibly representing a blood stream infection (BSI), in 27 (24.3%) patients. The most common organism was coagulase-negative Staphylococcus (CoNS) (n=14) followed by Enterococcus faecium (n=8), Candida spp (n=6), and Pseudomonas aeruginosa (n=5). Of 11 cases only growing CoNS, 5 (45.5%) had repeat same-day cultures, but only two grew the same organism. Median time to first positive culture was 13 days (IQR 8-18.5). Fourteen cases (34.1%) were not on matched empiric antimicrobial therapy, of which 4 (28.6%) grew only CoNS. The average number of blood cultures per CRRT day was 1.2. Total number of CRRT days per possible BSI was 34 days, with 98 days for one possible BSI not on matched empiric therapy, and 138 days for a non-CoNS BSI not on matched empiric therapy. Forty-nine (44.1%) patients survived their ICU stay. Of these, 33 (67.3%) continued to have surveillance cultures drawn after CRRT cessation with 16 (32.7%) continuing after ICU discharge. Median days of surveillance cultures after CRRT cessation was 7 days (IQR 5-10). **Conclusion:** While the total proportion of positive cultures not on matched empiric therapy was high at 34.1%, the total number of CRRT days for one non-covered positive culture was high at 98 days. These numbers go down to 24.4% and up to 138, respectively, if CoNS-only cultures are excluded. Routine daily blood cultures may detect a small number of unexpected BSIs in patients whose fever response is masked while on CRRT. However, it is a low yield practice that could benefit from a more targeted approach.

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Willing and Readiness of LTCF's to Admit and Manage CRE Patients – a Multi-Center Study
Owen Simwale and Oliver Kunda

Background: Carbapenem-Resistant Enterobacterales (CRE's) are an imminent and growing threat to our healthcare system, especially those in Long Term Care Facilities (LTCF). Most patients with CRE in the US are diagnosed in hospitals but often discharged to LTCF's. But how willing and prepared are LTCF's to take and effectively manage CRE patients? We conducted a multi-center survey of 200 LTCF's across 4 states (CT, CA, PA, TX) to assess their willingness to admit and preparedness to manage CRE patients. **Objective/methods:** A questionnaire was sent to 200 consenting facilities asking about willingness and readiness to manage a CRE patient. We excluded LTAC's and SNFv which tend to have more exposure to CRE and thus more open to accept CRE patients. Readiness was measured by capacity built around CDC recommendations for CRE management and prevention in LTCF. Survey results were analyzed using SAS inc. **Results:** Of the 200 surveys sent, 168 were completed and returned. Eighteen (18) were excluded for incompleteness or unclear responses. Of the 150 facilities included in the analysis, only 18 (12%) said they have had experience managing a CRE resident and 41(27%) said they would accept CRE patients. Most common reasons for unwillingness to accept CRE patients were lack of private rooms, fear of causing an outbreak and not being prepared to handle such cases. As for readiness to handle CRE patients 71(47%) said they had a CRE policy, 45 (30%) had contingent plans for how to effectively isolate CRE patients, 60 (40%) said they had isolation signage for CRE, 38 (25%) had cleaning and disinfection supplies for CRE, 21 (14%) had contingent plans for surveillance testing if that were needed. A majority 145 (97%) were aware to both notify public health if they have a case and to use an inter-facility form when transferring the patient to another facility. **Conclusion:** Our study, though small in size, highlights how unwilling and unprepared a lot of LTCF's are to take on CRE patients. We also highlight some of the barriers and gaps in preparedness that can be addressed to build the capacity of LTCF's to take in and manage CRE residents effectively.

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Candida auris and MRSA Shedding During Caregiving versus Rest in Nursing Homes
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Background: Candida auris and methicillin-resistant Staphylococcus aureus (MRSA) are prevalent in nursing homes, and both are known to shed profusely from the skin. We evaluated the degree of differential shedding during caregiving activities versus at rest in nursing home residents. **Methods:** Residents at two nursing homes were screened for C. auris and MRSA using nares, axilla/groin, and peri-rectal swabs. Carriers of C. auris, some of whom also carried MRSA, were evaluated for proximal shed around their bed during rest and caregiving activities using chromogenic settle plates. Morning caregiving activities (e.g. hygiene care, linen/clothing change) were noted to generally take 12 minutes. For rest, settle plates were