

Presentation Type:

Poster Presentation

Subject Category: Infection Control

Comparison of Infection Risks Between Intravenous and Subcutaneous Trepstinil in Patients with Pulmonary Hypertension

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Background: Trepstinil, 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 trepstinil 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%)

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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