Poster/Abstract#
P1549

Multivariable Evaluation of In-Vitro Performance of Ceftolozane/Tazobactam, Ceftazidime/Avibactam, Imipenem/Relebactam & Cefiderocol on Difficult-to-Treat *Pseudomonas aeruginosa* Isolated from Clinical Samples

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Background

Pseudomonas aeruginosa is a challenging organism classified by the CDC as a Serious Threat and by the WHO as a Critical Priority. Therapeutic challenges of P. aeruginosa are based on its multiple intrinsic resistance mechanisms and capability for acquiring others, including β-lactamases such as *blcKPC* and *blcVIM*. The IDSA 2023 Guidance on the Treatment of AMR GN Infections, classifies *P. aeruginosa* as Difficult-to-Treat (DTR), based on non-susceptible to all the following antimicrobials: piperacillin/tazobactam, ceftazidime, cefepime, aztreonam, meropenem, imipenem, ciprofloxacin, and levofloxacin. In this abstract we evaluated the potency of ceftolozane/tazobactam (C/T), ceftazidime/avibactam (C/A), imipenem/relebactam (I/R) & cefiderocol (CFD) against non-carbapenemase producing *P. aeruginosa* DTR.

Methods

Susceptibility MIC data for *P. aeruginosa* DTR isolates from multiple clinical samples across AdventHealth Orlando from January to August 2023, was mined from our laboratory system. The criteria included all non-carbapenemase producing *P. aeruginosa* DTR from any clinical source with broth microdilution for C/T (bioMérieux Vitek2® GN801), C/A, I/R (Thermo Fisher Sensititre™) and CFD (Liofilchem ComASP®). Multivariable analysis was used applying 2023 CLSI breakpoints.

Difficult-to-Treat (DTR): intermediate or resistant to:
- Piperacillin/tazobactam
- Ceftazidime
- Cefepime
- Meropenem
- Imipenem
- Ciprofloxacin
- Levofloxacin

n=155

→ **1st DTR Reflex:**
- Ceftolozane/tazobactam

80%S
n=124

20%R
n=31

→ **2nd DTR Reflex:**
- Cefiderocol: **97%S**
- Imipenem/relebactam: **26%**
- Ceftazidime/avibactam: **16%**

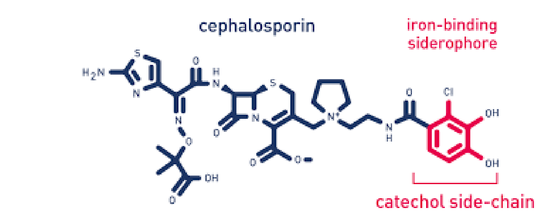
n=31

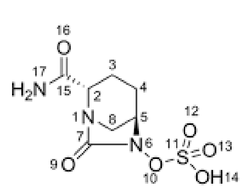
Thermo Fisher Sensititre™ MDR Panel

Liofilchem Cefiderocol CompASP®

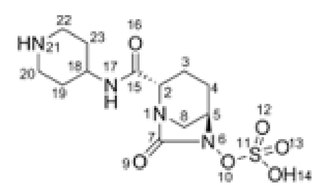
Results

A total of 155 DTR strains were initially tested for C/T with 80% (n=124) susceptible. Within the 31 isolates resistant to C/T, 30 (97%) isolates were susceptible to CFD, 8 (26%) susceptible to I/R and 5 (16%) susceptible to C/A. 4 isolates resistant to C/T and C/A were susceptible to I/R, and 1 isolate resistant to C/T and I/R was susceptible to C/A. 21 out of 22 isolates resistant to C/T, C/A and I/R were susceptible to CFD. The only isolate resistant to CFD was also resistant to other agents.





avibactam



relebactam

Conclusions

C/T is our main *anti-P. aeruginosa* DTR agent with 80% susceptibility. It is routinely tested on all DTR isolates. On C/T resistant isolates, additional reflex testing is performed following our internal lab protocol, including C/A, I/R & CFD. This study demonstrated that C/T is our most potent 1st line agent against *P. aeruginosa* DTR and CFD demonstrated the best potency against C/T resistant strains with 97% susceptibility. CFD potency is preserved even on C/T, C/A, and I/R resistant strains.