Abstract 5834

Evaluation of antimicrobial susceptibility testing assays for ceftazidime-avibactam and ceftolozane-tazobactam with Gram-negative bacteria directly from positive blood culture on the Pheno system

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Background: New antibiotics recently FDA-approved for multidrug-resistant organisms include: ceftolozane-tazobactam (C/T), a compound with activity against multidrug-resistant *Pseudomonas aeruginosa* and ceftazidime-avibactam (CZA), a beta-lactam/beta-lactamase inhibitor compound with activity against class A and D carbapenemase-producing organisms. AST performance for these compounds with Enterobacterales and *P. aeruginosa* directly from positive blood culture (PBC) was evaluated using the Accelerate Pheno™ system, compared to broth microdilution (BMD).

Materials/methods: 294 clinical isolates (100 *P. aeruginosa,* 82 *Klebsiella* spp., 56 *E. coli*, 24 *Citrobacter* spp., 14 *Enterobacter* spp., 15 *Proteus* spp. and 3 *S. marcescens*) were tested with CZA and C/T. Aliquots of BD BACTEC™ Standard Aerobic media containing healthy donor blood were seeded with 10-100 bacterial cells and incubated until positivity. PBC aliquots were run using the Accelerate PhenoTest™ BC kit on the Accelerate Pheno™ system according to manufacturer instructions for use and results compared to BMD. Only samples with valid results from both methods were included in analysis. Essential agreement (EA), categorical agreement (CA), very major error (VME) and major error (ME) rates were calculated using EUCAST 2019 breakpoints.

Results: EA/CA for all antimicrobial/organism combinations were >90%. CZA had 1 VME and 6 ME. CZA does not have an intermediate range with *P. aeruginosa* and Enterobacterales, and 3 of 6 CZA ME were in EA. For C/T, there were 2 VME and 2 ME.

Conclusions: Results demonstrate the tests for CZA and C/T on the Accelerate PhenoTest™ BC kit are good. A limitation of this study is only 27 CZA-resistant organisms were tested. Further work will evaluate a larger number of resistant isolates.

	Ceftazidime-Avibactam			Ceftolozane-Tazobactam		
	Enterics	*P. aeruginosa*	Overall	Enterics	*P. aeruginosa*	Overall
n	186	86	272	175	92	267
EA	185 (99.5%)	83 (96.5%)	268 (98.5%)	173 (98.9%)	87 (94.6%)	260 (97.4%)
CA	184 (98.9%)	81 (94.2%)	265 (97.4%)	173 (98.9%)	90 (97.8%)	263 (98.5%)
VME	1 (7.7%)	0	1 (3.7%)	2 (2.7%)	0	2 (2.1 %)
ME	1 (0.6%)	5 (6.9%)	6 (2.4%)	0	2 (2.8%)	2 (1.2%)
S	173	72	245	102	71	173
R	13	14	27	73	21	94

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