Antimicrobial Activity of Ceftazidime-Avibactam, Ceftolozane-Tazobactam and Comparators Tested against Pseudomonas aeruginosa and Klebsiella pneumoniae Isolates Collected from US Medical Centers in 2016–2018

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INTRODUCTION
Very few agents remain-ceftriaxone, aztreonam, or cefepime; and all carbapenem-resistant agents against a large collection of contemporary P. aeruginosa nonsusceptible (82.2-83.2%) isolates (Tables 1 and 2 and Figure 1).

MATERIALS AND METHODS
Bacterial isolates
• A total of 1,352 P. aeruginosa and 849 K. pneumoniae isolates were consecutively collected from US medical centers (37 states) in 2016–2018.
• Only isolates determined to be significant by local criteria as the reported probable cause of infection were included in the program.

Susceptibility testing and screening for β-lactam–encoding genes
• Both microbiological testing was conducted according to CLSI reference methods.
• Clinical and Laboratory Standards Institute (CLSI) guidelines were used for testing β-lactam MICs (Table 1) and for β-lactamase detection (Table 2). Cephalosporin MICs were interpreted using CLSI breakpoints and susceptibility to aztreonam was determined using CLSI-established guidelines.

RESULTS
Ceftazidime-avibactam (CAZ-AVI) was susceptible (≥90%) and ceftolozane-tazobactam (M-59) was susceptible (≥70%) against ESBL-producers (67.2%) and carbapenemase (CPE)-producers (0.0%; Figure 2). Table 1.

CONCLUSIONS
• Ceftazidime-avibactam was active against >90% of ESBL-producing and 46.6% of CPE-producing P. aeruginosa. 
• Ceftazidime-avibactam was active against >90% of ESBL-producing and >46% of CPE-producing P. aeruginosa.
• Ceftazidime-avibactam exhibited a variable treatment option for infections caused by P. aeruginosa and K. pneumoniae in clinical settings, including those caused by multidrug-resistant organisms.

Table 1. Antimicrobial activity of ceftazidime-avibactam, ceftolozane-tazobactam and comparators against P. aeruginosa and K. pneumoniae from United States medical centers (2016–2018)

Table 2. Cross-resistance among β-lactam and β-lactamase inhibitor combinations when tested against P. aeruginosa isolates from United States medical centers (2016–2018)

REFERENCES
3. CLSI (2019). Performance standards for antimicrobial susceptibility testing; Twenty-Ninth informational supplement. Wayne, PA.