Introduction
The burden of multidrug-resistant *Pseudomonas aeruginosa* (MDR-PA) infections is a global healthcare challenge (1, 2). Surveillance monitoring in Qatar established significant prevalence of MDR-PA. Collected isolates were tested against alternative treatment options in particular, ceftazidime/avibactam (CZA) and ceftolozane/tazobactam (C/T), which have been approved for treatment of complicated Gram-negative infections (3).

Methods
A total of 205 MDR-PA isolates were collected between 2014-2015 from four hospitals in Qatar. The pathogens were isolated from: respiratory 44.9% (92), skin-soft tissues 26.3% (54), urine 23.4% (48), blood 3.4% (7) and other sites 2% (4). The activity spectrum of CZA and C/T were tested in vitro against MDR-PA using E-test according to international standard recommendations. MDR-PA were defined according to previously agreed consensus (4).

Results
MDR-PA demonstrated favorable susceptibility to both CZA and C/T, at 68.8% (141/205) and 62.9% (129/205), respectively. Remarkably, 22.4% (46/205) of isolates were non-susceptible highlighting antimicrobial resistance endurance. Cumulative MIC 50/90 distribution to both CZA and C/T were, 4/64 µg/ml and 2/256 µg/ml, respectively.

When compared with eight other antibiotics, only colistin demonstrated higher susceptibility at 96.6%. The comparative results of phenotypically resistant of isolates to other antibiotics and CZA and C/T showed no significant correlation apart from fair agreement between C/T and CZA with amikacin (AMK) (0.37, p<0.001, k=0.27, p<0.001 respectively).

Conclusion:
Although the study results demonstrated lower than expected in vitro susceptibility of CZA and C/T against MDR-PA isolates in Qatar compared to other regions probably because of accumulated resistance; it paved the way for potential future role of CZA and C/T in the management of MDR-PA infections.

The novel antibiotics will be recommended as alternatives to complement existing options hindered by their recognized limitations.

References

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