Results. We included 250 patients during the study period. The median age was 55 (19–91) years, 55.6% (139/250) were male, and 49.2% (123/250) were admitted to the intensive care unit (ICU). 77.2% (193/250) had at least one comorbidity, with solid-organ malignancy (27.6%, 69/250) being the most common. Most patients had at least one invasive device, commonly a nasogastric tube (64.4%, 161/250) or mechanical ventilator (63.2%, 150/250). There was an increase in Acute Physiologic Assessment and Chronic Health Evaluation (APACHE) II score, qSOFA, and septic shock from baseline to 24 hours prior to colistin use (Table 1). The most common site of infec-
tion was the respiratory tract (90.8%, 227/250). Majority of patients (78.8%, 197/250) had Acinetobacter baumannii infection of which 79.9% were extensively drug-resistant (XDR), susceptible only to colistin and amikacin or minocycline. Colistin was given for a mean of 12 (2–43) days, concomitant with meropenem in 96.4% (241/250). Most patients received piperacillin–tazobactam (59%, 142/250) and/or meropenem (58%, 138/250) within the same admission. Nephrotoxicity (10.8%, 77/250) was the most frequent adverse effect (Table 2). Renal replacement therapy was needed in 6% (15/250) patients. Clinical success was seen in 61.2% (153/250) patients and overall mortality was 41.6% (104/250). Conclusion. Colistin was frequently used in combination with a carbapenem for treatment of XDR-related respiratory infection or septic shock. Nephrotoxicty was a common adverse effect. The clinical success rate was modest and overall mortality was high.

521. In vitro Antimicrobial Activity of Ceftazidime/Avibactam Compared with Ceftolozane/Tazobactam Against Clinical Isolates of Pseudomonas aeruginosa at a Large Academic Tertiary Care Hospital
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Background. Ceftazidime/avibactam (CZA) and ceftolozane-tazobactam (CT) are new additions to the antibiotic armamentarium with activity against gram-negative pathogens, most notably drug-resistant Pseudomonas aeruginosa (PSA). The purpose of this study was to compare the in vitro activity of CZA and CT against a large real-world sample of clinical isolates of PSA displaying different phenotypes of resistance to conventional β-lactams at an institution where both CZA and CT are routinely tested on all isolates.

Methods. All cultures from patient infections with PSA from May 2018 to February 2019 at Michigan Medicine were included. Minimum inhibitory concentrations (MICs) were determined using TREK broth microdilution panels and isolates were considered susceptible to MV if the MIC was ≤4 mg/L and MEM if the MIC was ≤2 mg/L.

Results. A total of 2,976 isolates of PSA from clinical specimens were included. 80.5% of isolates were susceptible to MEM (MIC ≤1 mg/L and MIC ≥8 mg/L, range ≤1 to >32 mg/L) at a breakpoint of ≤2 mg/L and 86.3% at a breakpoint of ≤4 mg/L; whereas 90.8% of isolates were susceptible to MV (MIC ≤1 mg/L and MIC ≥4 mg/L, range ≤1 to >8 mg/L). Of those displaying MEM MIC ≥2 mg/L, 53% (n = 308) were susceptible to MV. Of those displaying MEM MIC >4 mg/L, 33.7% (n = 137) were susceptible to MV. Although the majority of MIC discordances in MEM/R-MV/S isolates were 1–2 doubling dilutions, 52 (38%) isolates had their meropenem MIC decreased ≥3 doubling dilutions by the addition of vaborbactam suggesting significant inhibitory activity (Table 1).

Conclusion. We found a surprising number of PSA isolates with discordant MV and MEM susceptibility at Michigan Medicine. Further exploration of mechanisms of meropenem resistance in these isolates was warranted. 

Table 1

| Scoring Criteria | n=250 | µ and ±SD |
|------------------|-------|-----------|
| Septic shock | | |
| Baseline | 13 (5.2) |
| 24 hours prior to colistin | 40 (16) |
| APACHE II | | |
| Baseline | 13.5 ± 4.9 |
| 24 hours prior to colistin | 16.0 ± 4.7 |
| qSOFA | | |
| Baseline | 1.00 ± 0.87 |
| 0 | 82 (32.8) |
| 1 | 99 (39.6) |
| 2 | 56 (22.4) |
| 3 | 13 (5.20) |
| 24 hours prior to colistin | 1.40 ± 0.97 |
| 0 | 51 (20.4) |
| 1 | 83 (33.2) |
| 2 | 80 (32.0) |
| 3 | 36 (14.4) |
| Day 7 of colistin | 0.97 ± 0.06 |
| 0 | 111 (44.4) |
| 1 | 68 (27.2) |
| 2 | 39 (15.6) |
| 3 | 32 (12.8) |

Table 2. Adverse Events

| Toxicities | n=250 | µ and ±SD |
|------------|-------|-----------|
| Nephrotoxicity | 77 (30.8) |
| AKI Stage 1 | 27 (10.8) |
| AKI Stage 2 | 20 (0.0) |
| AKI Stage 3 | 30 (12.0) |
| CTRT | 15 (0.2) |
| Neurotoxicity | 11 (0.4) |
| Hypersensitivity | 11 (4.4) |

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