2436. Use of Piperacillin/Tazobactam vs. Cefepime or Carbapenem for Infections Due to *Serratia, Citrobacter*, or *Enterobacter*

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Background. AmpC β-lactamases are an inducible type of resistance not readily detected by rapid diagnostics. Carbapenems and cefepime are considered the standard of care antibiotics for organisms likely to harbor the AmpC gene. However, data on the efficacy of piperacillin–tazobactam are lacking. The objective of this study was to compare clinical outcomes between piperacillin–tazobactam (PTZ) vs. cefepime (FEP) or a carbapenem (CAR) for pneumonia or bacteremia caused by *Serratia*, *Citrobacter*, or *Enterobacter* species.

Methods. This single-center retrospective cohort study evaluated adult patients admitted between January 2007 to October 2017 with either a blood culture or bronchoalveolar lavage (BAL) positive for either *S. marcescens, C. freundii, E. cloacae,* or *E. aerogenes*. Data came from the University of Kentucky Microbiological Laboratory and Center for Clinical and Translational Science (CCTS) Data Bank. Patients included must have received PTZ, FEP, or CAR for at least 72 hours. Patients were excluded if they received other antibiotics as definitive therapy (defined as antibiotic used for majority of treatment), Gram-negative combination therapy for more than 72 hours, had isolates resistant to definitive antibiotic therapy, or expired within 48 hours of admission.

Results. A total of 321 patients were identified (154 PTZ and 167 FEP/CAR). Demographics were similar between the two groups, although patients treated with PTZ tended to be slightly older and admitted to the ICU. More patients in the PTZ group (56.5%) had positive BAL cultures compared with the FEP/CAR group (40.7%) (P = 0.0047). The most common pathogen isolated among both PTZ and FEP/CAR patients was *Enterobacter* spp. (60.4% and 56.3%, respectively) (P = 0.5040). Overall, 11% of PTZ patients died in-hospital compared with 12.6% of FEP/CAR patients (P = 0.6704). In terms of 30-day readmission rate, 2.6% of PTZ patients and 2.4% of FEP/CAR patients were readmitted within 30 days of discharge (P = 0.9076).

Conclusion. Compared with FEP/CAR, patients with *Serratia*, *Citrobacter*, or *Enterobacter* bacteremia or pneumonia treated with PTZ did not show a significant difference in terms of in-hospital mortality and 30-day readmission rate.

Disclosures. **All authors:** No reported disclosures.

2437. Colistin Usage, Do We Need to Worry About Its Toxicity Among Children With Cancer?

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Background. Gram-negative bacteria susceptible only to colistin are emerging causes of complicated infections especially in the immunocompromised patients, reviving interest in the use of colistin. The purpose of this study was to test the renal toxicity along with efficacy of a salvage therapy with a colistin among pediatric cancer patients in our hospital.

Methods. A prospective, observational, cohort study was performed from May 2017 to October 2017 in Children's cancer hospital Egypt 57357. All patients who had Blood Stream Infections due to COS Gram-negative bacteria and received intravenous Colistin were prospectively enrolled. A standardized case form was used to record patient characteristics, including age, sex, weight, underlying comorbidities, type of infection, causative organism and *in vitro* susceptibility, daily doses and duration of colistin therapy, cumulative dose of colistin, co-administered antibiotics, nephrotoxic agents, and clinical and microbiological responses to therapy, daily serum creatinine clearance, and estimated creatinine clearance were recorded.

Results. One hundred and Thirty-four Blood Stream infectious episodes due to *Klebsiella* species (pneumoniae and Oxytoca) (32%), and *E. coli* (68%) were analyzed. All strains were fully susceptible to colistin, with MICs of 0.19–1.5 mg/L. It was employed as combination therapy with carbapenems (69.2%) or aminoglycosides (30.8%). Median duration of treatment was 9 days (range 1–50 days). Clinical and Microbiological cure was observed in 107 cases (80%). Acute kidney injury developed during 5 treatment courses (4%)in combination with Amikacin. No renal replacement therapy was required and subsided within 7 days from Colistin discontinuation. No correlation was found between variation in serum creatinine level (from base line to peak) and daily and cumulative doses of CMS.

Conclusion. Our study shows that in severe infections due to COS Gram-negative bacteria, Colistin had a high efficacy, without significant renal toxicity. Looking into the failure of microbiological cure, we need to further study the possibility of increasing the Colistin with cautious monitoring of renal functions, and Therapeutic Drug monitoring. Furthermore, the bacterial isolates should be studied at the genetic level for resistance.

Disclosures. **All authors:** No reported disclosures.

2438. Ceftolozane/Tazobactam (C/T) Against Multidrug-Resistant *Pseudomonas aeruginosa* (MDR-Pa) Infections: Clinical Efficacy, and Baseline and Emergent Resistance

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Background. Experience is mounting for C/T against MDR-Pa infections. More data are needed on efficacy for different infections, and baseline and emergent resistance.

Methods. We retrospectively reviewed patients receiving >48 hours of C/T for MDR-Pa infections. Clinical success was defined at 30 days as survival, improved symptoms, and absence of recurrent infection. Microbiologic failures were defined as isolation of MDR-Pa following ≥7 days of C/T. Minimum inhibitory concentrations (MICs) were determined by broth microdilution.

Results. 63 patients were included. Median age was 58 (range: 23–91), 54% were men, and median Charlson score was 4 (0–12). 35% were transplant recipients. At onset of infection, median APACHE II and SOFA scores were 21 (2–49) and 5 (0–17), respectively. Infections included pneumonia (n = 45), tracheobronchitis (n = 4), intra-abdominal (n = 4), skin/soft tissue (n = 3), urinary tract (n = 3), bacteremia (n = 2), endocarditis and empyema (n = 1 each). Median duration of C/T was 13 days (3–52). 58% of patients with pneumonia received concomitant inhaled antibiotics. 30% patients received concomitant intravenous antibiotics. Overall rates of clinical success and survival at 30 days were 57% and 78%, respectively. Failures were due to death (n = 14), recurrent infection (n = 7), lack of clinical improvement (n = 5), or early discontinuation of C/T (n = 1). Rates of success and survival for pneumonia were 53% and 71%, respectively. Success rates were 67% and 51% among patients receiving C/T mono- *vs.* combination therapy (P = 0.29). Among surviving patients (n = 49), microbiologic failures occurred in 49% at a median of 23 days (7–64) from C/T initiation. Micro failures were due to recurrent pneumonia (n = 6) or colonization (n = 18). 56% of patients survived at 90 days. Median C/T MIC vs. baseline MDR-Pa isolates was 2 μg/mL (range: 0.5–>256); 10% of patients had C/T resistant isolates at baseline. Among patients with microbiologic failures infected by C/T susceptible isolates at baseline (n = 21), 38% developed resistance. The median duration of treatment prior to the emergence of resistance was 17 days (6–53).

Conclusion. C/T was effective for treatment of various MDR-Pa infections. MDR-Pa cannot be assumed to be C/T susceptible at baseline, and MICs should be measured before treatment and following microbiologic failure.

Disclosures. **R. K. Shields**, Allergan: Grant Investigator, Research grant. Pfizer: Consultant and Scientific Advisor, Speaker honorarium. Shionogi: Scientific Advisor, Consulting fee. Roche: Grant Investigator, Research grant. Venatorx: Grant Investigator, Research grant. Medicines Company: Grant Investigator and Scientific Advisor, Consulting fee and Research grant. Accelerate Diagnostics: Scientific Advisor, Consulting fee. **M. H. Nguyen**, Merck: Grant Investigator, Research grant. Astellas: Grant Investigator, Research grant.

2439. Outcomes of Minocycline Use on Gram-Negative Infections and Implications of MIC

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Background. Minocycline (MINO) is a treatment option for *Acinetobacter baumannii* and *Stenotrophomonas maltophilia* infections due to high *in vitro* susceptibility. Literature suggests it may also be an option for carbapenamase-producing enterobacteriaceae. MINO minimum inhibitory concentrations (MICs) vary by organism and dosing varies by center. Additional data are needed to assess MINO effectiveness in Gram-negative infections and determine if a relationship exists between MIC and treatment outcomes.

Methods. Retrospective study evaluating MINO use in adults at NewYork-Presbyterian Hospital from 2012 to 2017. Patients included received MINO ≥2 days for a culture-positive Gram-negative infection (CDC/NHSN criteria) susceptible to MINO. Patients with MINO started >5 days after positive culture or with untreated polymicrobial infections were excluded. The primary outcome was clinical failure at the end of therapy. Secondary outcomes included 30-day mortality, development of resistance or recurrence within 90 days.

Results. 114 patients were included: majority were male (51%) with median age 57 years. Median duration was 12 days with 8 patients receiving high-dose MINO (≥150 mg q12H). *S. maltophilia* was the most prevalent pathogen (72%) followed by