## Figure 2. Patient Demographics and Treatment Characteristics

| Patient Demographics | Cefepime N= 70 (%) | Meropenem N = 57 (%) |
|---|---|---|
| Sex (female) | 26 (37.1%) | 19 (33.3%) |
| Median Age (Range) | 61 (23-87) | 59 (18-85) |
| ICU Admission | 42 (60.0%) | 38 (66.6%) |
| ID Consult | 47 (67.1%) | 45 (78.9%) |
| Treatment Indication | Bacteremia: 20 (28.6%) Pneumonia: 28 (40.0%) Empiric: 5 (7.1%) Other: 17 (24.3%) | Bacteremia: 19 (33.3%) Pneumonia: 19 (33.3%) Empiric: 6 (10.5%) Other: 13 (22.8%) |

| Selected Comorbidities | Cefepime N= 70 (%) | Meropenem N = 57 (%) |
|---|---|---|
| Chronic Kidney Disease | 15 (21.4%) | 11 (19.3%) |
| End Stage Renal Disease (dialysis) | 4 (5.7%) | 3 (5.3%) |
| Seizure Disorder | 5 (7.1%) | 5 (8.8%) |
| Prior Adverse Neurologic Reaction to β-lactam | 0 (0.0%) | 3 (5.3%) |
| Stroke Hemorrhagic Ischemic | 5 (7.1%) 2 (2.9%) 3 (4.3%) | 1 (1.8%) 1 (1.8%) 0 (0.0%) |
| Alcohol Use Disorder | 7 (10.0%) | 3 (5.3%) |

| Treatment Characteristics | Cefepime N= 70 (%) | Meropenem N = 57 (%) |
|---|---|---|
| Median duration of treatment (Range) | 8 (3 – 53) | 11 (2 – 118) |
| Median time to PK sampling, hours (Range) | 60.1 (24 - 293) | 63.6 (13 - 325) |
| Trough concentration range | 1.9 – 140.5 | 0.6 – 31.3 |
| Median trough concentration CrCl > 60 mL/ min CrCl < 60 mL/ min | 12.7 mg/L 28.1 mg/L | 4.1 mg/L 9.3 mg/L |
| Sampled dosing regimen 2g q 8h 2g q 12h 1g q 6h 1g q 8h 1g q 12h Other | 26 (37%) 22 (31%) 3 (4.3%) 8 (11.4%) 5 (7.1%) 6 (8.6%) | 23 (40.4%) 7 (12.3%) 2 (3.5%) 15 (26.3%) 6 (10.5%) 4 (7.0%) |
| Receipt of prolonged infusion (defined as ≥3 hours) | 57 (81.4%) | 49 (85.9%) |
| Receipt of renal replacement therapy | 6 (8.6%) | 8 (14.0%) |
| Dose appropriate for renal function | 63 (90%) | 51 (89.5%) |
| Median # of Concomitant NT Rx/patient NT No NT | 4 4 | 5 6 |

## Figure 3. Adverse Neurologic Events and Attributable Neurotoxicity

| Neurotoxicity | Cefepime N= 70 (%) | Meropenem N = 57 (%) |
|---|---|---|
| Any Adverse Neurologic Events | 29 (41.4%) | 30 (52.6%) |
| Attributable Rate of Neurotoxicity | 7 (10%) | 3 (5.3%) |
| NTAB review not indicated | 42 | 27 |
| Neurotoxicity Unlikely | 21 | 27 |
| Neurotoxicity Possible | 3 | 2 |
| Neurotoxicity Probable | 3 | 1 |
| Neurotoxicity Definitive | 1 | 0 |
| Description of Neurotoxicity Altered Mental Status Myoclonus | 6/7 (85.7%) 1/7 (14.3%) | 3/3 (100%) 0 (0.0%) |

## Figure 4. β-Lactam Exposures in Relationship to Attributable Neurotoxicity
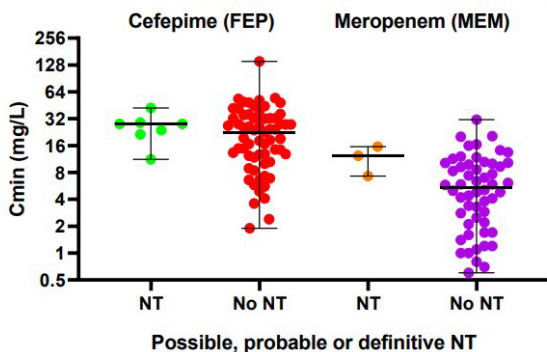


**Conclusion.** Our study is the first to evaluate FEP NT prospectively and compare rates of NT to pts receiving MEM. We established criteria that were applied by a blinded NTAB. In doing so we found rates of NT to be lower than previously reported and not statistically different between FEP and MEM. Cmin values were highly variable and associated with numerically, but not statistically higher rates of NT for both agents. These findings serve as the basis for larger, multicenter studies and justify use of routine TDM to limit NT among high-risk pts.

### 1101. Implementing a Beta-Lactam Therapeutic Drug Monitoring Program: Experience from a Large Academic Medical Center

Venugopalan Veena, PharmD[1]; Malva Hamza, PharmD Candidate[2]; Barbara A. Santevecchi, PharmD, BCPS, BCIDP[2]; Kathryn DeSear, PharmD, BCIDP[3]; Kartikeya Cherabuddi, MD[4]; Charles A. Peloquin, Pharm.D.[4]; Charles A. Peloquin, Pharm.D.[4]; Mohammad H. Al-Shaer, PharmD[4]; [1]University of Florida, College of Pharmacy, Gainesville, FL; [2]University of Florida College of Pharmacy, Gainesville, Florida; [3]University of Florida Health Shands Hospital, Gainesville, Florida; [4]University of Florida, Gainesville, FL

**Session:** P-62. PK/PD Studies

*Background.* Beta-lactams (BL) are the cornerstone of antimicrobial treatment for infections. Beta-lactam therapeutic drug monitoring (BL-TDM) optimizes drug concentrations to ensure maximal efficacy and minimal toxicity. The goals of this study were to describe the implementation process of a BL-TDM program and to further describe our experience using BL-TDM in clinical practice.

*Methods.* This was a retrospective review of adult patients with available BL-TDM between January 2016 and November 2019 at the University of Florida (UF) Health Shands Hospital. Total serum concentrations of BL were measured in the Infectious Diseases Pharmacokinetics Lab (IDPL) at UF, using a validated ultrahigh pressure liquid chromatography assay with triple quadrupole mass spectroscopy (LC-MS-MS). At our institution, TDM is available for 11 BLs and in-house assays are performed from Mon-Fri for most BLs.

*Results.* A total of 3,030 BL concentrations were obtained. An analysis was performed on the first BL-TDM encounter in 1,438 patients. The median age was 57 years (IQR, 41-69) and the median BMI was 27.5 kg/m$^2$ (IQR, 22.5-34.5). On the day of BL-TDM, the median serum creatinine was 0.83 (IQR, 0.59-1.30). Fifty-one percent of patients (n=735) were in an ICU at the time of BL-TDM with a median SOFA score of 6 (IQR, 3-9). BL-TDM was most frequently performed on cefepime (61%, n=882), piperacillin (15%, n=218), and meropenem (11%, n=151). The BL was administered as a continuous infusion in 211 (15%) patients. An interim analysis of 548 patients showed that BL-TDM was performed a median of 2 days (IQR, 1-4) from the start of BL therapy and resulted in a dosage adjustment in 26% (n=145).

*Conclusion.* BL-TDM was performed in older, non-obese patients with normal renal function. Over half of the evaluated patients were in an ICU at the time of TDM. This finding emphasizes the value of BL-TDM in the ICU setting because altered pharmacokinetics during critical illness has been linked to enhanced BL clearance. Interestingly, BL-TDM resulted in dosage adjustment in 1 in 4 patients who were receiving licensed BL dosing regimens, thus highlighting the role of TDM in dose individualization. BL-TDM was performed most commonly within the 72-hours of therapy initiation. Early BL-TDM has been shown to improve patient outcomes and should be promoted.

### 1102. Evaluation of Vancomycin Accumulation in Patients with Obesity

Maha Assadoon, PharmD[1]; Jeffrey C. Pearson, PharmD, BCIDP[1]; David W. Kubiak, PharmD[1]; Mary P. Kovacevic, PharmD, BCCCP, BCPS[1]; Brandon Dionne, PharmD, BCPS-AQ ID, AAHIVP[1]; [1]Brigham and Women's Hospital, Boston, Massachusetts

**Session:** P-62. PK/PD Studies

*Background.* Current vancomycin guidelines recommend using actual body weight for dosing. However, in patients with obesity, this may result in lower initial vancomycin concentrations that can accumulate with continued doses due to differences in volume of distribution. The objective of this study is to evaluate the incidence of vancomycin accumulation in patients with obesity and identify potential factors associated with accumulation.

*Methods.* This is a single-center, retrospective, observational study at a tertiary academic medical center. Adult patients with a BMI ≥ 30 kg/m$^2$ and with ≥ 2 vancomycin serum trough concentrations within the same encounter in 2019 were screened. Patients were excluded if they were pregnant, had unstable renal function or severe renal impairment, received < 3 doses before a concentration was drawn, or had inconsistent dosing prior to a concentration draw. Linear kinetics were used to correct for differences in timing of concentration or dose changes. The major endpoint was the incidence of vancomycin accumulation, defined as a 20% increase in trough concentration between the first and any subsequent trough concentrations within the first 10 days of therapy. Minor endpoints included the percentage of supratherapeutic concentrations and the incidence of acute kidney injury (AKI). Descriptive statistics were used to evaluate endpoints and multivariable logistic regression was used to evaluate factors associated with accumulation.

*Results.* We screened 543 patients, and 162 were included in our analysis. The median age was 56.5 years (interquartile range [IQR] 43 - 65.3), and 62.3% were male. The