Methods. Between September 2016 and May 2017, we collected urine samples from patients with UTI examined at a university-affiliated healthcare center. During the same time, we recovered *E.coli* from retail meat products (chicken breast, ground turkey, ground beef, and pork chops) collected as part of the National Antimicrobial Resistance Monitoring System (NARMS) FDA retail meat sampling program in Northern California. Urine samples and buffered peptone water containing meat samples were cultured on MacConkey agar. Lactose-positive and indole-positive colonies were presumptively identified as *E coli*. Bacterial DNA was extracted by a freeze-boil method. *E. coli* isolates were genotyped by multilocus sequence typing (MLST).

Results. Of 1020 urine samples, *E. coli* was isolated from 210 (21%). Five pandemic MLST genotypes (ST95, ST127, ST69, ST73, and ST131) accounted for 126 (60%) isolates. Of 200 meat samples, *E. coli* was isolated from 76 (38%). *E. coli* was isolated from 29 (73%) of 40 ground turkey samples, 34 (43%) of 80 chicken breast, 7 (18%) of 40 ground beef, and 6 (15%) of 40 pork chop. ST69 and ST131 were isolated from 3 chicken samples. Other genotypes of *E. coli* isolates from meat samples and CA-UTI included ST10 (3), ST38 (2), ST88 (1), ST117 (5), ST906 (1), and ST1844 (1). Eleven (32%) of 34 chicken samples contained UPEC strains, compared with 4 (14%) of 29 ground turkey samples, and 1 (17%) of 6 pork chop samples; no beef samples contained UPEC strains.

Conclusion. Overall, we found that nearly one-quarter of retail poultry products that we tested contained UPEC strains with the same MLST genotypes found in CA-UTI patients. Foodborne transmission may account for a substantial proportion of CA-UTI. Additional studies are needed to demonstrate transmission of these genotypes from poultry to patients and to target possible prevention measures.

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

956. Getting it Right the First Time: Relating Pharmacokinetic-Pharmacodynamic Target Attainment and Patient Outcomes

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Background. The importance of delivering appropriate therapy to patients at the onset of treatment is well established. However, this goal is easier said than done given the complexity and uniqueness of each patient case. Nonetheless, treatment decisions driven by pharmacokinetic-pharmacodynamic (PK-PD) can account for patient variability and assist in selecting patient-specific therapies. Using data obtained from electronic decision support software (EDSS), we evaluated the relationship between the probability of PK-PD target attainment (PTA) and patient outcomes.

Methods. Data obtained over a 20-month period from an EDSS were evaluated and included: (1) patient demographics; (2) infection type; (3) pathogen; (4) clinician-selected antimicrobials; (4) pathogen susceptibility; (5) clinician-provided early and late outcomes. Data calculated by the EDSS included the PTA for all evaluated antimicrobial regimens. Using logistic regression, relationships between the probability of PTA and clinical improvement and clinical success at 48 hours and Days 7–10, respectively, were assessed.

Results. Data for 121 patient cases with various infection types were available. The most common pathogens reported were MRSA (14.9%) and *K. pneumoniae* (14.9%). Overall, 76.3% of patients demonstrated clinical improvement at 48 hours while 70.3% of patients demonstrated clinical success at Days 7–10. Based on the relationship between the probability of PTA and clinical improvement at 48 hours (Figure 1), for every 10% increase in PTA, patients were 1.74 times more likely to demonstrate clinical improvement (OR [95% CI] 1.74 [1.28–2.37], $P < 0.001$). At Days 7–10 (Figure 2), patients were 1.82 times more likely to have a successful response (OR [95% CI] 1.82 [1.29–2.58], $p < 0.001$). Based on these relationships, the predicted percent probability of a positive outcome at 48 hours and Days 7–10 for an initial treatment regimen with PTA of 90% was 77.2% and 76.1%, respectively.

Conclusion. Statistically significant positive relationships between PTA and clinical outcomes at 48 hours and Days 7–10 were identified. These data demonstrate the value of PK-PD in dosing regimen selection and provide a path toward delivering appropriate initial therapy to optimize patient outcomes.

Figure 1. Relationship between probability of target attainment and probability of clinical improvement at 48 hours

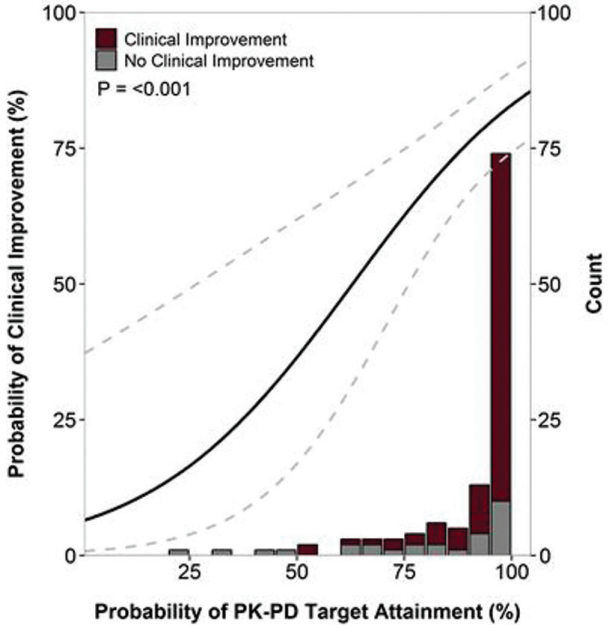
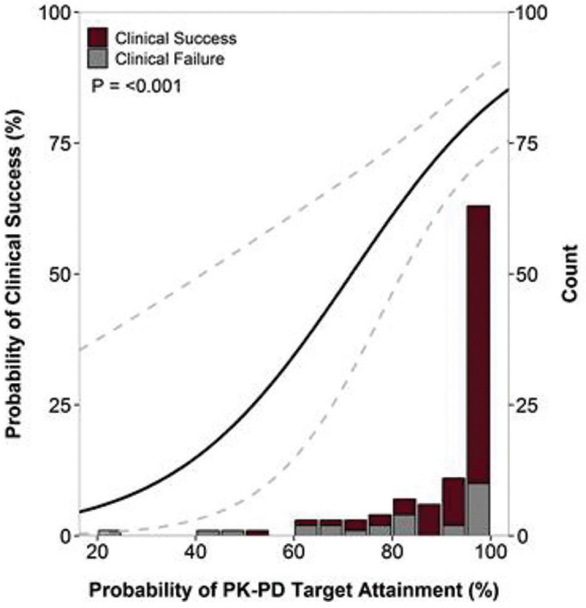


Figure 2. Relationship between probability of target attainment and probability of clinical success at Day 7-10.



Disclosures. **S. M. Bhavnani**, ICPD Technologies: Shareholder, stock options; **C. M. Rubino**, ICPD Technologies: Shareholder, stock options; **P. G. Ambrose**, ICPD Technologies: Shareholder, stock options

957. Pharmacodynamic Target Attainment for Meropenem and Piperacillin/Tazobactam Using a PK/PD-based Dosing Calculator in Critically Ill Patients

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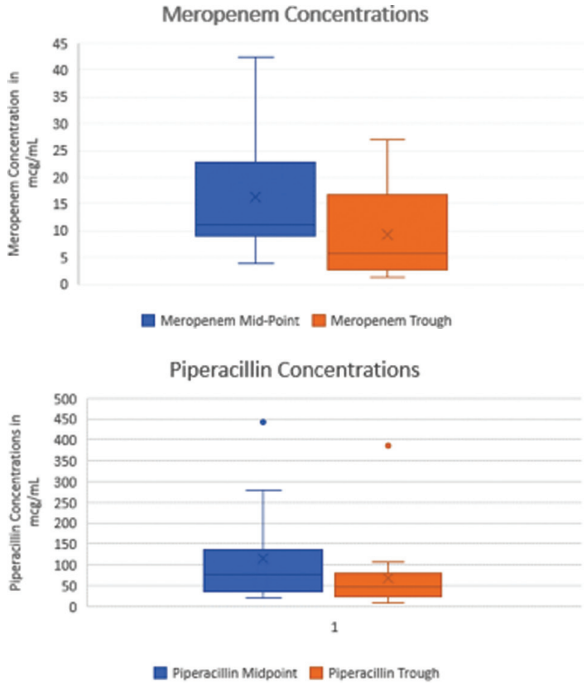
Background. Unbound plasma concentrations of β-lactam antibiotics vary widely and attainment of PK/PD targets is highly variable in critically ill patients, which may affect microbiologic cure or contribute to toxicity. PK/PD-based antibiotic dosing programs may provide more accurate doses that achieve predicted targets for a cultured organism.

Methods. This was a single center, prospective study of critically ill patients with culture positive gram-negative infections treated with meropenem (MEM) or piperacillin/tazobactam (TZP). A PK/PD-based antibiotic dosing app was used to select doses that had a probability of target attainment (PTA) of 90% or greater for time above MIC ($fT_{>MIC}$) of at least 40% for MEM and 50% for TZP. Total meropenem, piperacillin and tazobactam mid-point and trough concentrations were obtained at steady-state and adjusted for protein binding, to assess target attainment.

Results. Thirty-six patients were enrolled; 20 received MEM and 16 TZP. Antibiotic concentrations varied widely amongst patients, particularly with TZP. MEM and TZP concentrations are displayed in Table 1 and Figure 1. Doses evaluated for >90% probability of target attainment in the dosing calculator differed from standard package labeled doses for 25% (5/20) of MEM and 18.8% (3/16) of TZP patients. All (20/20) MEM and 94% (15/16) TZP patients maintained $fT_{>MIC}$ for the entire dosing interval.

Conclusion. A PK/PD based antibiotic dosing calculator that provides individualized β-lactam doses can lead to altered doses that may increase probability of target attainment in critically ill patients. Future research is needed to review the relevance of PK/PD-based dose adjustments on clinical outcomes.



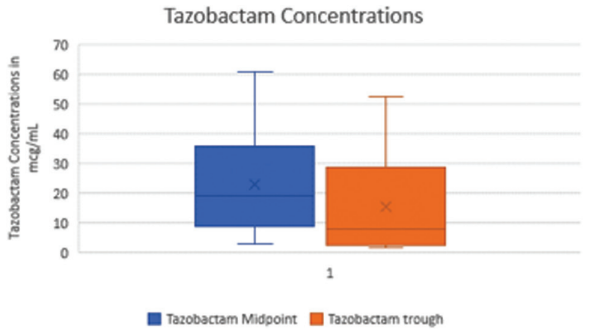


Table 1. Meropenem, piperacillin, and tazobactam concentrations adjusted for protein binding in µg/ml

	Meropenem		Piperacillin		Tazobactam	
	Midpoint	Trough	Midpoint	Trough	Midpoint	Trough
Mean (SD)	15.93 (11.23)	9.24 (8.34)	81.25 (81.79)	46.65 (62.69)	16.09 (12.00)	10.70 (12.45)
Low value	3.86	1.36	14.51	5.68	1.97	1.04
High value	41.45	26.38	311.26	269.78	42.61	36.77
Median organism MIC (range)	0.25 (0.25–4)		6 (4–32)			

Disclosures. **D. P. Nicolau**, Shionogi & Co.: Research Contractor, Research support; **A. Farkas**, Optimum Dosing Strategies: Employee, Salary.

958. A Novel Antimicrobial Stewardship Program-Guided Procalcitonin Initiative for Emergency Department Diagnosis of Bacterial Pneumonia in New York City

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Background. An accurate diagnosis of bacterial pneumonia in the Emergency Department (ED) is challenging, resulting in inappropriate antibiotic use, adversely impacting patient care and safety. Procalcitonin (PCT), a serum biomarker, has good positive predictive value for bacterial lower respiratory tract infections. We sought to evaluate the impact of using PCT in an antimicrobial stewardship program (ASP)-driven algorithm to manage patients with presumed pneumonia in the ED.

Methods. We performed an IRB-approved quality initiative, 4-month retrospective evaluation of adult patients evaluated for pneumonia using PCT in a 515-bed university-affiliated hospital. Initial PCT use was restricted to ED for hemodynamically stable patients with presumed pneumonia. Subsequent PCT levels were ordered by ASP team members at 8- to 12-hours and days 3, 5, and 7 to guide the duration of antibiotic use and interpreted as per existing guidelines. Prior to start of initiative, aggressive education was provided by ASP to ED staff, followed by algorithm implementation. Outcomes included hospital admission, days of antibiotics, antibiotic use ≤48 hours, total PCT levels, length of stay, and 30-day pneumonia readmission.

Results. Baseline demographics of initial 182 patients differed between negative and positive PCT groups with age (78 vs. 84, $P = 0.037$) and sex_{female} (88 vs. 15, $P = 0.001$). Negative PCT was associated with lower temperature ($P = 0.0002$), and white blood cell count ($P = 0.0001$) on admission (Figure 1). Patients with negative PCT had reduced antibiotic initiation (71% vs. 95%, $P = 0.001$) and were less likely to be admitted (89% vs. 98%, $P = 0.078$). A total of 460 PCT levels were collected [negative group: 303, median 2(2,2), positive group: 157, median 4(3,4)]. Patients with negative PCT had reduced antibiotic duration ($P < 0.001$) and length of stay ($P = 0.004$) (Figures 2 and 3). There were no reported adverse events or differences in 30-day pneumonia readmissions.