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

Emily Heil, PharmD, BCPS-AQ ID[1]; David P. Nicolau, PharmD, FCCP, FIDSA[2]; Gwen Robinson, MPH[3]; Andras Farkas, PharmD[4,5]; Kerri Thom, MD, MS[6]; [1]Pharmacy Practice and Science, University of Maryland School of Pharmacy, Baltimore, MD; [2]Center for Anti-Infective Research and Development, Hartford Hospital, Hartford, Connecticut; [3]University of Maryland School of Medicine, Baltimore, MD; [4]Mount Sinai West Hospital, New York, New York; [5]Computer Simulation Studies, Optimum Dosing Strategies, Bloomingdale, New Jersey; [6]University of Maryland, Baltimore, Baltimore, MD

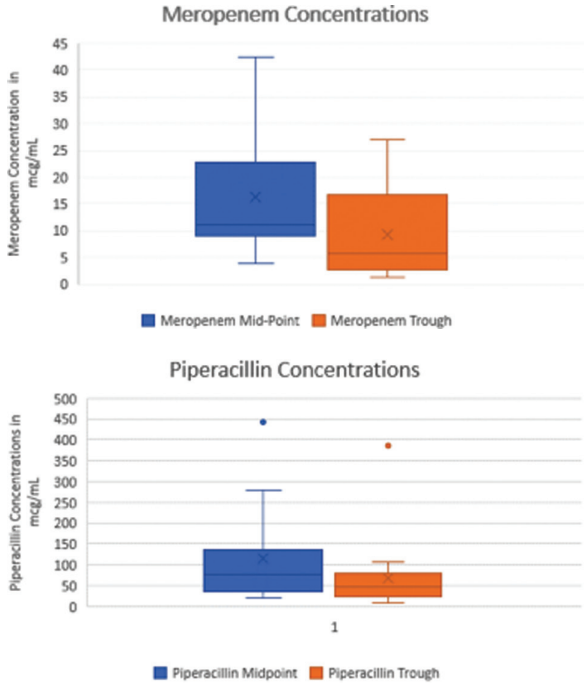
Session: 123. Stewardship Tools
Friday, October 6, 2017: 8:30 AM

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.



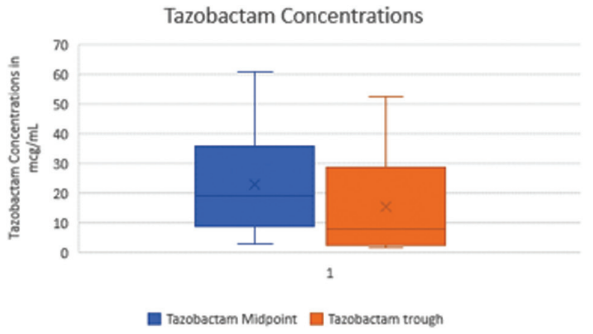


Table 1. Meropenem, piperacillin, and tazobactam concentrations adjusted for protein binding in µg/ml

	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

George D. Rodriguez, Pharm.D.[1,2]; Roman Yashayev, P.A.-C.[2]; Bella Yushuvayev, P.A.-C.[2]; Anna Kula, P.A.-C.[2]; Nathan Warren, P.A.-C.[2]; Geeti Dhillon, MD[1,2]; Demetra Tsapepas, PharmD, BCPS[3]; Caroline Keane, RN, MSN, ANP[4]; William H. Rodgers, MD, PhD[5]; Jonathan Siegal, MD[6]; Manish Sharma, DO, MBA[6]; Sorana Segal-Maurer, MD[1,2]; [1]The Dr James J Rahal Jr. Division of Infectious Disease, NewYork-Presbyterian Queens, Flushing, New York; [2]Medicine, NewYork-Presbyterian Queens, Flushing, New York; [3]NewYork-Presbyterian Hospital, New York, New York; [4]Case Management and Social Work, NewYork-Presbyterian Queens, Flushing, New York; [5]Pathology and Clinical Laboratory, NewYork-Presbyterian Queens, Flushing, New York; [6]Emergency Medicine, NewYork-Presbyterian Queens, Flushing, New York

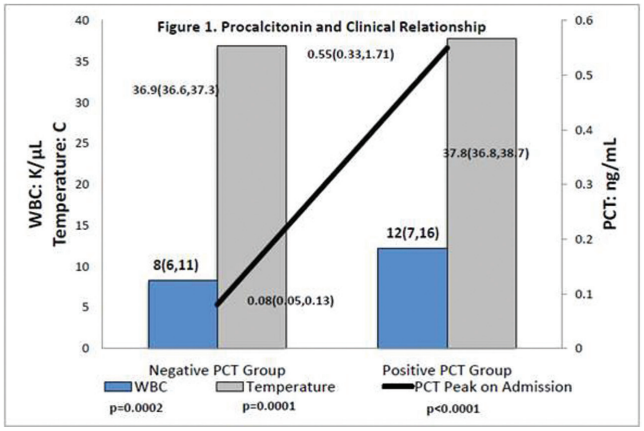
Session: 123. Stewardship Tools
Friday, October 6, 2017: 8:30 AM

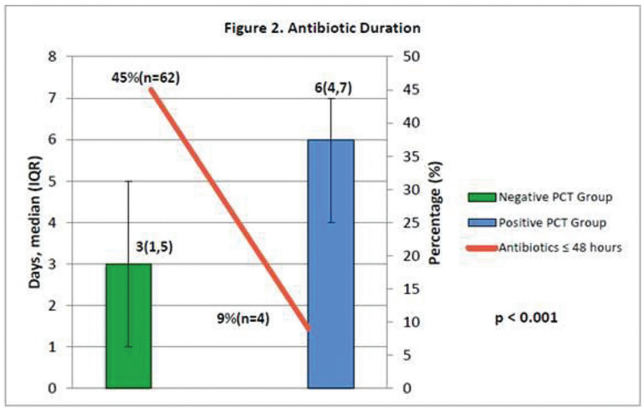
Background. An accurate diagnosis of bacterial pneumonia in the Emergency Department (ED) is challenging, resulting in inappropriate antibiotic use, adversely impacting patient care and safety. Procalcitonin (PCT), a serum biomarker, has good positive predictive value for bacterial lower respiratory 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.

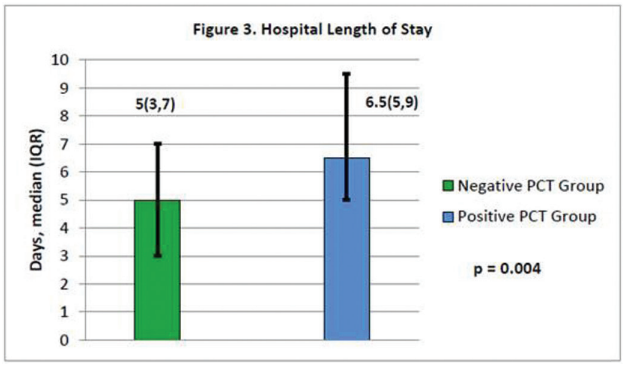
Methods. We performed an IRB-approved quality initiative, 4-month retrospective evaluation of adult patients evaluated for pneumonia using PCT in a 515-bed university-affiliated hospital. Initial PCT use was restricted to ED for hemodynamically stable patients with presumed pneumonia. Subsequent PCT 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.

Conclusion. Implementation of a PCT algorithm through ASP is a novel and efficacious addition to improving diagnostic yield, targeting appropriate therapy, and reducing length of stay. The impact on antibiotic resistance remains to be determined.







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

959. Communicating Microbiology *Results*. It's Not Just What You Say, But How You Say It

Mary Musgrove, PharmD[1]; Rachel M Kenney, PharmD[2]; Ronald Kendall, PharmD[3]; Robert Tibbetts, PhD D(ABMM), F(CCM)[4]; Linoj Samuel, PhD., D(ABMM)[5]; Mike Peters, PharmD, BCPS[1]; Susan Davis, PharmD[6]; [1]Pharmacy, Henry Ford Hospital, Detroit, Michigan; [2]Henry Ford Hospital, Detroit, Michigan; [3]Henry Ford Wyandotte Hospital, Wyandotte, Michigan; [4]Department of Pathology and Laboratory Medicine, Henry Ford Hospital, Detroit, Michigan; [5]Microbiology, Henry Ford Hospital, Detroit, Michigan; [6]Henry Ford Health System, CFP#3, Michigan

Session: 123. Stewardship Tools
Friday, October 6, 2017: 8:30 AM

Background. Gaps in microbiology communication can lead to suboptimal antibiotic prescribing. In May 2016, our laboratory modified reporting of respiratory cultures growing commensal flora only to specify "no methicillin-resistant *Staphylococcus aureus*/MRSA or *Pseudomonas aeruginosa*" (PA). The purpose of this study was to compare MRSA and PA antibiotic therapy utilization before and after the change.

Methods. IRB approved, quasi-experiment at four hospitals with an antimicrobial stewardship program. Dates: August 1, 2015–January 31, 2016 and August 1, 2016–January 31, 2017. Included: ≥18 years, commensal flora only respiratory culture, empiric MRSA and PA antibiotic for treatment of lower respiratory infection. Excluded: non-respiratory infection. Primary outcome: MRSA or PA therapy de-escalated. Secondary outcomes: time to culture result, MRSA and PA antibiotic days of therapy, length of stay. Safety outcomes: acute kidney injury (AKI), *C. difficile* (CDI), subsequent multi-drug-resistant organism (MDRO), in-hospital all-cause mortality.

Results. Two hundred and ten patients included, 105 per group. Median age 64 and 61 years, male sex 52% and 56% in pre- and post-group, respectively. Empiric antibiotics, pre vs. post: vancomycin 94% vs. 95%; cefepime 66% vs. 36%; piperacillin–tazobactam 10% vs. 46%. MRSA or PA antibiotics de-escalated: 39% pre and 73% post ($P < 0.001$). See Table 1 for variables associated with antibiotic de-escalation. Days of therapy: 7 vs. 5 days ($P < 0.001$). AKI 31% vs. 14% ($P = 0.003$). Eight subsequent MDRO in pre and one in post ($P = 0.035$). No differences: time to culture result, length of stay, mortality, CDI.

Conclusion. Improved microbiology communication to assist prescriber interpretation of commensal respiratory flora was associated with a reduction in the proportion of patients that received antibiotics targeting MRSA and PA.

Table 1.

	Antibiotic de-escalation	No antibiotic de-escalation	Unadjusted OR [CI]	Adjusted OR [CI]
No MRSA, no PA comment	77 (65%)	28 (30%)	5.0 [2.5–10.0]	5.7 [2.9–11.0]
Charlson Comorbidity Index < 3	42 (36%)	60 (65%)	3.4 [1.9–6.0]	3.0 [1.6–5.7]
APACHE II ≤15	45 (39%)	56 (61%)	2.5 [1.4–4.4]	2.7 [1.4–5.3]
Long-term care	14 (12%)	9 (10%)	0.8 [0.3–2.0]	0.4 [0.1–1.0]
≥2 SIRS criteria	52 (44%)	53 (58%)	1.7 [1.0–3.0]	–
Previous antibiotics	57 (48%)	40 (44%)	0.8 [0.5–1.4]	–
Hospitalization >48 hours	51 (43%)	39 (42%)	1.0 [0.6–1.7]	–

Disclosures. **S. Davis**, Merck: Received grant through college that I'm faculty for, Grant recipient; Allergan: Speaker's Bureau, Consulting fee; Allergan: Consultant and Scientific Advisor, Consulting fee; Medicines Company: Consultant and Scientific Advisor, Consulting fee; Zavante: Consultant and Scientific Advisor, Consulting fee.2

960. Can antibiotic De-escalation Be Measured Without Chart Review? A Proposed Electronic Definition

Rebekah W. Moehring, MD, MPH[1]; Xinru Ren, MS[2]; Deverick J. Anderson, MD, MPH[1]; Angelina Davis, PharmD, MS[1]; April Dyer, PharmD, MBA, MSCR, BCPS[1]; Yuliya Lokhnygina, MS, PhD[3]; Lauri Hicks, DO[4]; Arjun Srinivasan, MD, FSHEA[4]; Elizabeth Dodds Ashley, PharmD, MHS, FCCP, BCPS[1,5]; [1]Duke Center for Antimicrobial Stewardship and Infection Prevention, Durham, North Carolina; [2]Biostatistics, Duke University, Durham, North Carolina; [3]Biostatistics and Bioinformatics, Duke University, Durham, North Carolina; [4]Centers for Disease Control and Prevention, Atlanta, Georgia; [5]Duke Antimicrobial Stewardship Outreach Network (DASON), Durham, North Carolina

Session: 123. Stewardship Tools
Friday, October 6, 2017: 8:30 AM

Background. Antimicrobial stewardship programs promote de-escalation: moving from broad to narrow spectrum agents and/or stopping antibiotics as more clinical data return. A standard definition of de-escalation objectively applied to electronic data could provide a means to assess stewardship improvement opportunities.

Methods. We performed a retrospective cohort study of de-escalation events among five hospitals from the Duke Health System and the Duke Antimicrobial Stewardship Outreach Network using 2016 electronic medication administration record data. Antibiotics were ranked into four categories: narrow spectrum (e.g., cefazolin), broad spectrum, extended spectrum, and agents typically targeted for protection (e.g., meropenem). Included patients were cared for on inpatient units, had antibiotic therapy for at least 2 days, and had at least 3 days of hospitalization after starting antibiotics. De-escalation was defined as reduction in either the number of antibiotics or rank measured at two time points: day 1 of initiation of antibiotic therapy and day 5 (or day of discharge if occurring on day 3 or 4). Escalation was an increase in either number or rank of agents. Unchanged was either no change or discordant directions of change in number and rank. For all categories, the outcome was percent among qualifying admissions. Descriptive statistics were used to describe de-escalation among hospitals, unit type, and ICD-10 diagnoses.

Results. Among 39,226 included admissions, de-escalation occurred in 14,138 (36%), escalation in 5,129 (13%), and antibiotics were unchanged in 19,959 (51%) (Figure). Percent de-escalation was significantly different among hospitals (median 37%, range 31–39%, $P < .001$). Infectious diagnoses with lower rates of de-escalation included intra-abdominal infection (23%), skin and soft-tissue infection (28%), and ENT/upper respiratory tract infection (19%). Intensive care units had higher rates of both de-escalation and escalation (43% and 16%) when compared with non-ICU wards (35% and 13%, $P < .001$).

Conclusion. We provided an objective, electronic definition of de-escalation and demonstrated variation among hospitals, units, and diagnoses. This metric may be useful for assessing stewardship opportunities.