1601. Evaluation of Synergy with β-Lactams Plus Aztreonam Against *Pseudomonas aeruginosa* (PSA)

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Friday, October 4, 2019: 12:15 PM

Background. Combination therapy is often employed in the treatment of PSA infections. Agents commonly used in combination with β-lactams include aminoglycosides, polymyxins, and fluoroquinolones but are limited by resistance and toxicity concerns. The use of dual β-lactam therapy is an emerging area of interest for the treatment of patients with resistant Gram-negative pathogens. This study evaluated synergy between β-lactam agents and aztreonam (ATM) against PSA isolates with varying degrees of susceptibility.

Methods. 4 PSA clinical isolates were collected from Albany Medical Center; 1 ATCC isolate was used (Table 1). Synergy with cefepime (FEP), meropenem (MER), and ceftazidime (CAZ), each in combination with ATM, was assessed using fractional inhibitory concentration index determined by checkerboard method. Synergistic combinations were tested in 24-hour time-kill, utilizing minimum and steady-state physiological concentrations (C_{min} and C_{ss}). Tested bacteria were grown to late log phase, diluted to 1×10^6 cfu/mL and incubated at 37°C for 24 hours. Samples were drawn at 0, 2, 4, 6 and 24 hours. Synergy in time-kill was defined as ≥ 2 $\log_{10}$ cfu/mL kill greater than the most active individual agent at 24 hours.

Results. In checkerboard studies, combinations with ATM resulted in 80% synergy with FEP and 60% synergy with MER or CAZ combinations. ATM/MER and ATM/CAZ time-kill experiments resulted in indifference for most organisms and concentrations tested. For both single and combination regimens, initial killing was observed but varying degrees of regrowth occurred by 24 hours. The only strain with no regrowth at 24 hours was AMC-PSA2 (bactericidal activity and no regrowth at 24 hours observed for MER C_{min} MER C_{ss}, and MER+ATM C_{ss}). Against AMC-PSA2, CAZ+ATM at C_{min} was synergistic with limited regrowth observed.

Conclusion. Against PSA, tested β-lactam combinations with ATM resulted in lack of synergy in time-kill experiments, despite checkerboard results. Due to the extent of regrowth observed with nearly all single agent and combination regimens, testing of alternative combinations, including those that evade common resistance mechanisms such as efflux pumps or β-lactamases, and studies of dynamic concentrations are warranted.

Table 1. Isolate MICs (mg/L) and Checkerboard Results

	MER MIC	CAZ MIC	FEP MIC	ATM MIC	MER/ATM MIC	CAZ/ATM MIC	FEP/ATM MIC
AMC-PSA2	0.5	2	4	4	0.03/1 (S)	0.125/1 (S)	0.5/1 (S)
AMC-PSA7	16	4	4	16	4/2 (S)	1/2 (S)	1/4 (S)
AMC-PSA9	16	2	8	8	4/8 (I)	1/8 (I)	4/8 (I)
AMC-PSA10	4	32	2	16	0.125/1 (S)	0.5/1 (S)	0.5/4 (S)
ATCC 27853	1	2	2	4	0.125/4 (I)	0.5/2 (I)	0.5/0.5 (S)

S: Synergy; I: Indifference; A: Antagonism

Figure 1. Time-kill curves for MER+ATM and CAZ+ATM against AMC-PSA2

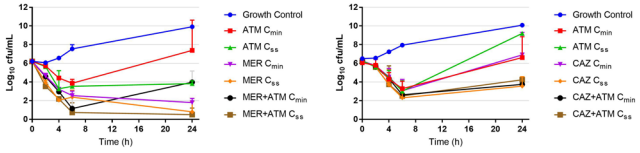
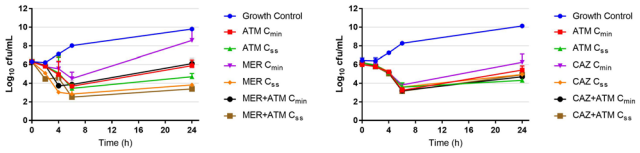


Figure 2. Time-kill curves for MER+ATM and CAZ+ATM against AMC-PSA10



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

1602. Antibiotic Resistance Patterns of Clinical *Escherichia coli* Urinary Isolates by Outpatient Practice Type

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Session: 162. PK/PD and Susceptibility Testing
Friday, October 4, 2019: 12:15 PM

Background. Antibiotic-resistant *E. coli* (EC) infections represent a major cause of morbidity and mortality, and pose a challenge to antibiotic stewardship. At present, clinicians in outpatient facilities may not have access to local antibiogram data to guide stewardship. Additionally, antibiotic resistance may vary between types of outpatient practices.

Methods. Using the database of a major clinical reference lab, this study analyzed several years of antibiotic susceptibility results for outpatient urinary EC isolates from Washington State. We compared rates of resistance to antibiotics between different types of outpatient practices, categorized using a modification of published ambulatory practice categories. Logistic regression was used to examine the association of outpatient practice type with antibiotic resistance, controlling year, sex, and age.

Results. After adjusting for year, sex, and age, logistic regression found significantly higher odds of resistance in urology compared with the reference groups of general family practice for ampicillin (OR 1.35), ciprofloxacin (OR 2.27), trimethoprim-sulfa (OR 1.51) and gentamicin (OR 1.73). We also saw increased odds of resistance to ciprofloxacin in patients from an oncology clinic (OR 1.56) as well as patients from "All other specialties" (OR 1.37). A lower odds of resistance was found in OBGYN clinics for ampicillin (OR 0.86), trimethoprim-sulfa (0.81) while a greater odds or resistance in OBGYN clinics was found for nitrofurantoin (OR 1.36).

Conclusion. Antibiotic resistance in EC urinary isolates can vary across types of outpatient practices according to clinical practice type. This may reflect differences in patient morbidity and/or differences in antibiotic stewardship practices and deserves further investigation. Patients with recurrent cases of resistant UTIs are generally referred to a urologist, and this was reflected in our data as there a higher odds of resistance was found in urology clinics. Similarly, we found higher odds of resistance into nitrofurantoin, a commonly prescribed antibiotic for UTIs in pregnant women, in OBGYN clinics that may reflect prescribing practices. Use of clinical data to create facility and specialty-specific antibiograms in outpatient settings may enable improved and "precise" antibiotic stewardship.

Table 1. Clinical specialty and age category

	Age category (n)			
Clinical specialty	0-18 yrs	19-50 yrs	>50 yrs	*Total*
General family practice	1275	7852	8125	*17252*
Internal medicine	16	374	1570	*1960*
Pediatrics	807	70	1	*878*
Obstetrics and gynecology	83	1524	507	*2114*
Urology	2	54	301	*357*
Oncology	0	22	202	*224*
All other	62	664	704	*1430*
All clinical specialties	2245	10560	11410	*24215*

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

1603. Observation of Treatment Outcomes During an Outbreak of Multidrug-Resistant *Shigella sonnei* Infections in a Retirement Community—Vermont, 2018

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Session: 163. Public Health
Friday, October 4, 2019: 12:15 PM

Background. In 2018, CDC and the Vermont Department of Health investigated an outbreak of multidrug-resistant *Shigella sonnei* infections in a retirement community. Most *Shigella* infections are self-limited, but antibiotics are indicated for severe illness and sometimes to limit transmission. The Clinical and Laboratory Standards Institute has not yet established breakpoints for azithromycin, so laboratories cannot report resistance. Although breakpoints exist for ciprofloxacin, isolates with one fluoroquinolone resistance mechanism typically have minimum inhibitory concentrations within the susceptible range (≤ 0.25 μg/mL).

Methods. We reviewed charts for treatment outcomes of outbreak patients to evaluate clinical and microbiologic response. We defined clinical failure as ≥ 3 loose stools per day for ≥ 1 day after completion of antibiotics and microbiologic failure as a positive stool culture after completion of antibiotics. We used broth microdilution to