Session: P-7. Antimicrobial Stewardship: Special Populations

Background: Antibiograms are important stewardship tools for empiric antibiotic prescribing. Appropriate therapy is particularly important in patients with hematologic malignancies and bone marrow transplants being treated for febrile neutropenia. These patients are at high risk for multi-drug resistance based on extensive prior antibiotic and hospital exposures, and therefore, hospital-wide antibiograms may not reliably reflect resistance patterns for this population. We created a unit-specific antibiogram for a closed hematology/oncology unit and hypothesized there would be decreased antibiotic susceptibilities compared to the hospital-wide antibiogram.

Methods: All positive cultures with antimicrobial susceptibilities on a closed 32-bed hematology-oncology unit from 7/2016-6/2019 were obtained from the microbiology laboratory. Based on recommendations by the Clinical and Laboratory Standards Institute (CLSI), only organisms with > 30 isolates were included in antibiogram analysis. Susceptibilities were compared to those reported in our hospital-wide antibiograms from the same time period using Fisher's exact test.

Results: Two organisms met CLSI criteria: *Escherichia coli* (n=83) and *Klebsiella pneumoniae* (n=31). Unit *Escherichia coli* isolates were significantly more resistant to almost all commonly tested antibiotics (Table 1). *Klebsiella pneumoniae* unit susceptibilities were significantly lower for many antibiotics, including aztreonam, ceftriaxone, cefepime, levofloxacin, piperacillin-tazobactam and tobramycin (Table 1).

Table 1: Percentage of Escherichia coli and Klebsiella pneumoniae isolates susceptible to reported antibiotic agents

	Escherichia coli			Klebsiella pneumoniae		
	Unit (n=83)	Hospital (n=4635)	P value	Unit (n=31)	Hospital (n=2044)	P value
Aztreonam	67.47	82.11	0.001	61.29	77.99	0.047
Ceftriaxone	67.07	82.04	0.001	61.29	78.58	0.027
Cefepime	70.73	83.52	0.004	61.29	77.89	0.047
Ciprofloxacin	45.78	63.12	0.002	67.74	80.25	0.254
Levofloxacin	45.78	64.79	<0.0001	70.97	87.21	0.014
Meropenem	97.59	99.64	0.039	96.77	95.39	1.000
Piperacillin-Tazobactam	65.06	77.84	0.008	48.39	73.99	0.002
Tobramycin	71.08	83.26	0.007	67.76	88.93	0.002
Amikacin	100	99.65	1	96.77	97.99	0.472

*p-value performed by Fisher's exact test

Conclusion: Our hematology-oncology antibiogram showed significantly lower antibiotic susceptibilities in *Escherichia Coli* and *Klebsiella pneumoniae* compared with the hospital-wide antibiogram. These findings can help guide prescribers toward appropriate broad-spectrum empiric therapy. Additionally, results suggest a need for intensified stewardship measures to prevent multi-drug resistance in this population.

Disclosures: **All Authors**: No reported disclosures

193. Adding Insalt to Injury: Evaluating the Consequences of Sepsis Protocols on Patients with Heart Failure

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Background: Inpatients with acute decompensated heart failure (ADHF) frequently meet sepsis criteria defined by the systemic inflammatory response syndrome (SIRS). To meet CMS guidelines, they receive a fluid bolus and broad-spectrum antibiotics, like piperacillin/tazobactam (pip/tazo), within 3 hours of presentation. A daily regimen of pip/tazo can contain as much as 1040 mg, or half the recommended dietary intake, of sodium. The objective of this investigation was to evaluate volume overloading and clinical consequences of sepsis protocols in patients with ADHF.

Methods: We reviewed inpatients ≥18 years old with ADHF per ICD-10 codes and an IV loop diuretic order who were initiated on a sepsis bundle, identified by IV fluid bolus and IV antibiotic orders. Patients who received ≥16 g of pip/tazo consecutively were compared to those who received other antibiotics. Outcomes included change in fluid homeostasis defined by increase in diuretic dose or frequency, or a weight increase ≥1 kg within a calendar day after receiving antibiotics; discharge disposition, length of stay (LOS), and 30-day readmission.

Results: We identified 95 patients admitted from 2/1/19 – 8/1/19. Thirty-four received pip/tazo, 61 received other antibiotics. Average age was 75, and 70% of patients had an infectious diseases diagnosis on discharge. Fluid homeostasis was poorer in the pip/tazo group compared to the other antibiotics group, demonstrated by weight increase ≥ 1kg (42% vs. 38%) and/or increase in diuretic intensity (65% vs. 51%). 30-day readmission rate was 2.9% in the pip/tazo group and 4.9% in the other antibiotics group. Median LOS was 11.5 vs. 7 days for the pip/tazo group and other antibiotics group, respectively. Rate of mortality was 32.6% during this encounter.

Conclusion: Early initiation of fluids and antibiotics may be detrimental in those without an infectious syndrome based on disrupted fluid homeostasis. Given lower sodium burden associated with other antibiotic selections, this has implications for antimicrobial stewardship.

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194. Antibiotic-resistant bloodstream infections in pediatric oncology patients on levofloxacin prophylaxis

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Background: Levofloxacin prophylaxis in pediatric oncology patients with chemotherapy-induced severe prolonged neutropenia has been shown to reduce risk for febrile neutropenia and systemic infections. With increased use of prophylaxis there is concern for development of antibiotic-resistant infections. We analyzed bloodstream infections (BSI) in pediatric oncology patients exposed to levofloxacin prophylaxis during prolonged severe neutropenic episodes to determine the rate of antibiotic resistance

Methods: We performed a retrospective chart review of pediatric oncology patients who received levofloxacin prophylaxis between January 2015 – December 2019. Patients were placed on levofloxacin prophylaxis based on institutional guidelines for patients at risk for severe prolonged neutropenia (i.e., absolute neutrophil count [ANC] < 500 cells/μL for >7 days). Demographic information, start and end dates for levofloxacin prophylaxis, and all BSI episodes within 2 months after exposure to the fluoroquinolone were collected

Results: Thirty-five patients were identified who received levofloxacin prophylaxis. There were 32 BSI in 12 patients. Twenty-five BSI involved gram-positive organisms (GP), including nine (36%) due to *coagulase negative Staphylococcus* and seven (28%) due to *viridans Streptococcus.* Seven BSI episodes involved gram-negative (GN) organisms with 4 (57%) from *E.coli.* Resistance to fluroquinolones was noted in 42% and 48% of BSI from GN and GP organisms respectively. The vast majority (85%) of *viridans Streptococcus* isolates were resistant to levofloxacin. In contrast, 8% of *viridans Streptococcus* isolates were resistant to fluoroquinolones from the same time frame per our hospital antibiogram.

Conclusion: In this recent cohort of pediatric oncology patients with BSI after exposure to levofloxacin prophylaxis, there was a high percentage infected with fluoroquinolone-resistant organisms.This contrasts with some of the earlier published data from adults which reported low rate of fluoroquinolone resistance. This case series highlights the need for close monitoring for development of antibiotic resistance as utilization of prophylactic levofloxacin increases in pediatric oncology patients.

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195. Antimicrobial Stewardship Incorporating New Antimicrobials for Use against Multi-Drug Resistant Pseudomonas aeruginosa in Cystic Fibrosis

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Background: Cystic fibrosis (CF) is a life-limiting genetic disease affecting approximately 80,000 people worldwide, including 30,000 in the United States. Chronic *Pseudomonas aeruginosa* (PA) infections in CF often develop to be multidrug-resistant (MDR) and are associated with worse clinical outcomes. Ceftolozane/Tazobactam (C/T) has shown benefits over other standards of therapy in selected populations with MDR-PA infections, but studies are lacking in the CF population. The objective of this study was to evaluate the current use and antimicrobial stewardship of C/T in CF patients with MDR-PA.

Methods: This is a retrospective study of hospitalized CF patients with infections due to positive cultures for MDR-PA from 2016–2019 at Baylor St. Luke's Medical Center in Houston, Texas. Electronic medical records were reviewed for patient demographics, presence of infectious diseases (ID) consult, antibiotics use, and clinical outcomes. A descriptive analysis was performed to compare the patient demographics and clinical outcomes between patients receiving C/T-based and non-C/T therapies.

Results: A total of 56 CF patients with positive MDR-PA cultures were identified (18 receiving C/T and 38 receiving non-C/T antibiotics). Most MDR-PA was cultured from the lungs (94.6%, 54/56). Patient age, weight, and body mass index were similar between those receiving C/T and non-C/T therapies as was the overall duration of antibiotic therapy 16.3 (± 8.7) vs. 13.9 (± 3.5) days in C/T and non-C/T groups, respectively. More patients in the C/T group had severe forced expiratory volume in 1 s (FEV_1) [£40%] at baseline (66.7% vs. 21.1%) and higher ICU admission rates (44.4% vs 2.6%). All C/T patients had an ID consult placed (3 ± 3.1 days after admission) but none in the non-C/T group. The 30-day recurrent pulmonary exacerbation rate was comparable between C/T and non-C/T groups (22.2% vs. 15.8%).

Conclusion: C/T was reserved for the sickest group of CF patients with severe FEV_1. Given the devastating disease progression with MDR organisms in CF, new antibiotics with better clinical outcomes against chronic MDR-PA should be considered earlier in therapy for this population. Larger studies are warranted to analyze cost-effectiveness and clinical outcomes.

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196. Assessing the Clinical Impact of Intravenous Acyclovir Dosing in Obese Patients: Should We Be Using Ideal, Adjusted, or Total Body Weight?

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Background: Obesity impacts the pharmacokinetics and pharmacodynamics of medications. Pharmacokinetic studies of intravenous (IV) acyclovir have demonstrated that dosing obese patients according to their ideal body weight (IBW) may provide a sub-therapeutic dose, while dosing based on total body weight (TBW) may increase