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Background. There are few data on risk factors, chosen therapy and healthcare utilization among US children with extended spectrum β-lactamase-positive urinary tract infection (ESBL UTI). We performed a multicenter case–control study on childhood ESBL UTI from November 2014 to February 2017; herein we present preliminary data from a single Los Angeles County hospital.

Methods. We defined UTI per 2011 AAP guidelines and ESBL per CLSI specifications. ESBL(-) UTI controls were matched by sex and age. Descriptive and matched univariate analyses on medical record data (up to 6 months after index culture) were performed.

Results. Among 893 urinary Enterobacteriaceae isolates, 28 were ESBL(+), of which 23 were included: 13 girls, 0–5 year olds; 4 girls, 26 year olds; and 6 boys, 0–5 year olds. Prior hospitalization (55 vs. 78% for cases vs. controls, respectively), prior receipt of systemic antibiotics (55 vs. 38%, hospitalization index (39 vs. 20%), mean length of stay (3.5 vs. 3.6 days), and medical comorbidities (44 vs. 56%) did not differ significantly between groups. As well, several biosocial risk factors were similar in both groups, including: race, ethnicity, non-English-speaker, access to public benefits, international travel, non-US-birth, domestic violence/child abuse/neglect, and housing insecurity. Of cases and controls receiving any therapy, 16% and 96%, respectively, got empiric antibiotics to which the isolate was susceptible (P = 0.001). After culture results were available, only 39% of cases and 96% of controls received effective agents (P = 0.00002). Forty-two percent of cases had clinical improvement (within a mean of 4.3 days vs. 4.6% for controls). Total treatment duration did not differ, and no deaths were recorded. In the 6 months after index UTI, groups did not differ in number of clinical encounters, proportion with documented follow-up, repeat urine tests, receipt of additional therapy, or prophylactic antibiotics. The proportions undergoing any CRB-specific imaging were similar (62 vs. 47%), but this imaging included modalities with in vitro activity in 4 cases vs. none of the controls (P < 0.05).

Conclusion. Our data suggest that clinical improvement occurs with initial (and potentially ineffective) empiric regimens, regardless of ESBL phenotype. The finding of more in vitro activity exposure warrants additional study.

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2418. Management of Carbapenem-Resistant Enterobacteriaceae Infections in a Long-term Acute Care Hospital
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Background. Long-term acute care hospital (LTACH) systematically selects a unique patient population with multiple risk factors for Carbapenem-resistant Enterobacteriaceae (CRE) colonization and infection leading to an increase CRE prevalence at these facilities. This selection bias creates a fertile ground to harness scientific data to address this unique population. We performed a retrospective analysis of patients with CRE infections diagnosed and treated in one LTACH.

Methods. Baseline data, antimicrobial treatment, and outcomes were collected in patients with bacteremia, healthcare-associated pneumonia (HCAP), and complicated urinary tract infection (UTI)/acute pyelonephritis (AP) due to CRE diagnosed between January 2017 and December 2017.

Results. 57 cases of CRE infections were identified over the study period; 12 bacteremias, 20 HCAP and 25 AP/UTI. The proportion of patient with significant risk factors included: 31.5% diabetes, 40.4% heart failure, 29.8% kidney disease and 10% with solid tumors. 89.5% of patients presented with sepsis and 33.3% had septic shock. Among 57 patients, majority (56) received empiric antibiotics known to have activity against Gram negative but only 38.6% had in vitro activity against the CRE organism recovered from cultured specimen. 85% of index CRE isolate was Klebsiella pneumoniae, 8.7% Enterobacter cloacae, 3.5% Proteus mirabilis, and 1.8% Escherichia coli. Treatment regimen varied; however, 78.9% received monotherapy. Overall outcome was poor with 28-day mortality of 17.5% across all infection sites but up to 25% in patients with bacteremia. Complete success was defined as meeting in all three of the following: (1) resolution of signs/symptoms, (2) no repeat isolation of the same organism in at least one culture and were treated for at least five days. Patients were excluded due to pregnancy, incarcereation, cystic fibrosis, receipt of combination therapy, or having prior case of treated S. maltophilia infection. Complete success was defined as meeting all three of the following: (1) resolution of signs/symptoms, (2) no repeat isolation 30 days after end of therapy, and (3) no switch or addition of alternative agents that cover S. maltophilia. Partial success was defined as meeting at least two out of the three criteria.

Results. A total of 109 patients were included in this study. No statistically significant difference in complete clinical success achievement was identified: TMP-SMX 14/32 (43.8%) vs. minocycline 17/37 (45.9%) vs. moxifloxacin 16/40 (40%), P = 0.8674. There was also no significant difference when including those that achieved partial clinical success: TMP-SMX 29/32 (90.6%) vs. minocycline 35/37 (94.6%) vs. moxifloxacin 34/40 (85%), P = 0.3724. Moxifloxacin use was associated with a significantly longer median LOS of 41.5 days compared with 24.5 days for TMP-SMX and 10 days for minocycline (P = 0.0340). Resistance development within 30 days post-treatment only occurred in 4 patients who received moxifloxacin (P = 0.0058). There was no difference in mortality nor treatment duration.

Conclusion. Clinical success achievement was found to be similar in patients treated with TMP-SMX, minocycline, or moxifloxacin monotherapy for S. maltophilia infections.

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2420. A Real-World Perspective on the Efficacy of Fosfomycin for Treatment of Multidrug-Resistant Pathogens Causing Urinary Tract Infections
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Background. Urinary tract infections (UTI) are the most common infection associated with multidrug-resistant (MDR) pathogens. With limited treatment options, there has been an increasing interest in the efficacy of fosfomycin (FOS); however, real-world clinical data are limited. Our objective was to assess the outcomes of hospitalized patients with MDR UTIs treated with FOS.

Methods. Retrospective review of patients with carbapenem-resistant (CRE) or extended spectrum β-lactamase producing (ESBL) Enterobacteriaceae, or vancomycin-resistant Enterococcus (VRE) UTIs who received ≥1 dose of FOS. UTI was defined as a urine culture with ≥10,000 CFU/ml among patients with dysuria, increased urinary frequency, suprapubic or flank pain or tenderness, fevers, or altered mental status without an alternative etiology. We defined cure as resolution of symptoms within 7 days without recurrence within 30 days. Microbiological failure was defined as a positive urine culture within 7 days.

Results. 49 patients with MDR UTIs (17 ESBL, 17 VRE, 15 CRE) were included. Median age was 69 range (20–95), 18% were male, 14% were immunosuppressed and the median Charlson score was 4 (0–12). 33% had indwelling catheters and 10% of patients had neurogenic bladder. Increased frequency (29%) and fever (27%) were the most common symptoms. 51% of cases were healthcare associated and 64% met the CDC/HHSN definition of UTI. UTIs were complicated by pyelonephritis in 2 patients, but none had concomitant bacteremia. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS. FOS was administered as empiric or definitive treatment in 39% and 61%, respectively. Only 12% of patients received ≥1 dose of FOS.

Conclusion. Across a range of MDR pathogens causing UTIs, FOS was well-tolerated and effective for hospitalized patients. FOS represents an attractive oral option to preserve alternative agents for systemic infections. Future studies are needed to evaluate the benefit of repeated dosing.

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2422. Efficacy of Ceftozaxime for the Treatment of Urinary Tract Infection (UTI) Due to ESBL-Producing E. coli and K. pneumoniae Isolates

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Background. Ceftozaxime has a good in vitro activity and stability in resistance to hydrolysis by ESBLs, and is a good candidate for the treatment of urinary tract infection (UTI). However, data are scarce regarding its use in clinical practice, especially against K. pneumoniae deemed to be capable of the acquirement of porin-deficient mutant.

Methods. We conducted a retrospective study from September 2014 to November 2017, in a tertiary-care hospital. We gathered all prescriptions of Ceftozaxime for UTI due to ESBL isolates. We compared the clinical outcomes between E. coli and K. pneumoniae ESBL-producing isolates after a 90-day follow-up. When available, we assessed whether Ceftozaxime-based regimen was associated with an emergence of resistance. To our knowledge there is no clinical data supporting a real threat of development of resistance in UTI.

Results. The treatment of 31 patients with a mean age of 60 ± 18 years was analyzed. We observed a clinical cure at D90 in 81.2% (n = 13/16) of cases for ESBL E. coli isolates and 85.7% (12/14) for ESBL K. pneumoniae (P = 0.72). Overall, we noted an efficacy of FOX around 83.3% (n = 25/30).

Median dose of Ceftozaxime was 4 g (2–8). Only one patient infected by an ESBL E. coli received an oral relay with levofloxacin for 4 additional days. No adverse events were reported. One patient who relapsed, carried a K. pneumoniae isolate that became intermediate to Ceftozaxime in the follow-up.

Conclusion. In a period of major threat with a continuous increase of ESBL obliging to a policy of carbapenem-sparing regimens, it seems detrimental to deprive physicians of using Ceftozaxime for ESBL Enterobacteriaceae for the treatment of UTI while our data show its efficacy.

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2423. Effectiveness and Safety of Cefolozane/Tazobactam (TOL/TAZ) Use for Carbapenem-Resistant Pseudomonas aeruginosa Infections in Children

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Background. Evidence for cefolozane/tazobactam use in children is limited. We describe herein the outcomes of children treated with TOL/TAZ for various types of infections caused by carbapenem-resistant Pseudomonas aeruginosa (CR-PA).

Methods. Retrospective analysis of children who received TOL/TAZ while hospitalized from 2014 to 2017. Clinical and microbiological outcomes and safety data were analyzed.

Results. 8 children received TOL/TAZ for CR-PA infections (table); 3 cystic fibrosis (CF) exacerbations, 2 ventilator-associated pneumonia (VAP), 1 tracheitis, 1 diabetic osteomyelitis (OM), 1 complicated intra-abdominal infection with urinary tract infection (cIAI/cUTI). All initial isolates were susceptible to TOL/TAZ per E-test. Creatinine clearance (CrCl) > 90 mL/minute in all patients. Median total length of stay (LOS) was 73 days (range: 11–221) and median inpatient duration of TOL/TAZ.