EC from UTIs in the United States and 11 countries in Europe (EU) in 2017 and the impact of co-resistance to oral agents used to treat UTIs.

Methods. 2422 unique EC from UTIs in the United States and EU in the SENTRY Surveillance program were evaluated for susceptibility to various agents. All isolates were consecutively collected and centrally tested by CLSI methods and interpreted by CLSI. Isolates were tested by ESBM MIC screening criteria were characterized for the presence of β-lactamase genes.

Results. Among the 2422 isolates of EC from UTIs in the United States and EU the resistance (R) rates for cefuroxime (CEF), levofloxacin (LEV) and TMD-SMX were 17.9%, 25.6% and 33.2%, respectively. The overall prevalence of ESBL phenotypes was 18.2% (18.7% in the United States and 21.0% in EU). Among the 411 ESBL phenotypes, R to CEF, LEV and TMD-SMX were 94.3%, 70.6% and 61.6%, respectively. In contrast, <0.1% of all EC or 0.2% of ESBL EC were meropenem (MER)-R. Only two carbapenemase-producing organisms were identified, an NDM-5- and a KPC-2-producing EC from Turkey and Greece, respectively. The CTX-M-15 was the most prevalent ESBL and identified among 167 isolates; with co-resistance to CEF, LEV and TMD-SMX noted in 100%, 82.6% and 70.7%, respectively. All CTX-M-15 isolates were susceptible to MER.

Conclusion. Oral agents such as CEF, LEV and TMD-SMX exhibit R rates ≥17.9%. Co-resistance to CEF, LEV and TMD-SMX were considerably higher among ESBL phenotypes (>61.1%) and confirmed blaCTX-M-15 genotypes (70.7%). In contrast, the carbapenem resistance was found against only 1.1% of ESBL EC phenotypes, and genotypes as such as blasRNA, New oral agents with the spectrum and potency of the carbapenem would address the unmet need for new options to treat multi-drug-resistant EC UTIs.

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1466. Alkaline Urine: A Cause for Urinary Tract Infection Recurrence

Bethany A. Wettengel, PharmD1; Jennifer Schroed, PharmD2; Sara DiTurri, PharmD3; John A. Selliak, DO, M5; Kari A. Mergenhagen, PharmD2; 1VA WNY Healthcare System, Buffalo, New York; 2Catholic Health System, Buffalo, New York

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Background. Urinary tract infections (UTIs) are one of the most common indications for antibiotics in both the inpatient and outpatient setting. The purpose of this study was to examine the impact of urinary pH on recurrence of UTIs. A recent review article stated imaging should be considered for patients with a urinary pH of 7 or higher. This study examines the impact of pH on outcomes of patients with UTI to determine whether pH plays a role in recurrent infection and representations to the healthcare facility.

Methods. This was a retrospective chart review via the computerized patient record system. Patients over the age of 18 years who presented to the healthcare facility between January 1, 2005 to January 1, 2019 for treatment of UTIs were included in this study. Alkaline urine was defined as a urinary pH greater than or equal to 7, while acidic urine was defined as a urinary pH less than 7. Urease splitting organisms included Proteus spp., Providencia spp., and Morganella spp. Outcomes included recurrence and representation to the healthcare facility within 30 days.

Results. A total of 793 patients were included in this study, of which 21.3% had alkaline urine. Patients with alkaline urine were more likely to have recurrence of UTI (8.3% vs. 4.3%). Patients with a catheter were more likely to have alkaline urine (30% vs 18%; P = 0.0005). As expected, alkaline urine was associated with a higher frequency of urease splitting organisms (19% in alkaline urine vs. 3% in acidic urine). Renal calculi were found in 3.6% of patients with alkaline urine; however, only 34.3% of patients with alkaline urine had imaging completed. The use of drugs which can alkalinize the urine did not differ significantly between groups.

Conclusion. Patients with an alkaline urinary pH were more likely to experience recurrence and readmission within 30 days. Imaging was performed in a minority of patients which may represent a potential target for stewardship programs. Alkaline urine may be a marker for urease splitting organisms and calculus formation. More widespread imaging may be able to detect stones, allowing for potential urologic intervention, preventing subsequent antibiotic courses and repeated healthcare presentations.

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1467. Antimicrobial Susceptibility and Molecular Characterization of Extended-Spectrum β-Lactamase of Escherichia coli and Klebsiella pneumoniae Urine Samples Isolated from Community Patients in South Brazil

Zuleica Naono Tano, MD1; Eliana Carolina Vesperna2; Juliana Dias, mast3; Alexandre Morbe Tjoj4; Evelyn P. Candido5; Andreia Andrekowicz, Postgraduate; Ana Ramos1; Renata Kobayashi, PhD1; Wander Pavaneli, PhD1; Londrina State University, Londrina, Paraná, Brazil; 2State University of Londrina, Londrina, Paraná, Brazil; 3Pharmacist student, Londrina, Paraná, Brazil; 4Controlab, Londrina, Paraná, Brazil; 5Center of Biological Sciences, State University of Londrina, PR, Brazil, Londrina, Paraná, Brazil

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Background. Enterobacteriaceae is the main pathogens of UTI. It is important to be aware the local epidemiological data for an appropriate initial treatment. Resistance to antimicrobial agents has increased, especially to first-choice antibiotics in the treatment of cystitis. Our objective is to assess the antimicrobial susceptibility profile from uropathogens isolated in community and evaluated the dissemination of extended-spectrum β lactamase (ESBL), in E. coli and K. pneumoniae in south of Brazil.

Methods. From June 2016 to June 2017, all urine samples collected in the Basic Health Units and Emergency Departments were sent to a Central Laboratory. Identification and susceptibility tests were performed on the VITEK® 2 (bioMérieux, France) system. Clinical Laboratory Standards Institute (CLSI) breakpoints were used for the interpretation of susceptibility. Positive cultures were defined as those demonstrating ≥20 μg/L (colony-forming units). The presence of ESBL was also assessed to the Chrom ID BILEE agar plate test (bioMérieux - Marcy l’Etoile, France). PCR technique uses specific primers for genes blalasRNA and blasRNA. Detection of the blaCTX-M genes was performed by multiplex PCR.

Results. A total of 56,555 microbiologic tests were performed, 8189 were positive. Women were responsible for 89.4%, and 10% were pregnant. Table 1 shows uropathogens isolated. Figure 1 shows antimicrobial susceptibility. Extended-spectrum β lactamase production was present in 6.7% (n = 489). People older than 60 had ESBL more frequent (P < 0.05) as well as being pregnant is not related to ESBL (P < 0.05). Table 2 shows the distribution of the blas genotypes.

Table 3: Distribution of blas Genotypes. Among blas M1 genotype, blas M15 was the most frequent.

Conclusion. In this study, the most frequent uropathogen isolated was E. coli followed by K. pneumoniae. Cetrimoxazol had high rates of resistance and nitrofurantoin the least. Quinolone resistance was more than 10%. Sensitivity to aminoglycosides and carbapenems remains high.

We found relevant frequency of ESBL, CTX-M-1 group most commonly found. Among CTX-M-1, blas M15 was the most isolated.
Table 2. Distribution of the blaCTX-M genotypes of 489 isolates, between ESBL producing E. coli and K. pneumoniae positive urine samples.

| blaCTX-M genotypes | E. coli (n=3120) | K. pneumoniae (n=519) | TOTAL (n=3639) |
|---------------------|------------------|------------------------|----------------|
|                     | Frequency (%)    | Frequency (%)          | Frequency (%)  |
|blaCTX-M1            | 165              | 50.0                   | 86             | 54.1 |
|blaCTX-M1 + blaCTX-M2| 4                | 1.2                    | 1              | 0.6  |
|blaCTX-M1 + blaCTX-M9| 3                | 0.9                    | 0              | 0    |
|blaCTX-M1 + blaCTX-M25| 8                | 2.4                    | 3              | 1.9  |
|blaCTX-M2            | 22               | 6.8                    | 3              | 1.9  |
|blaCTX-M25           | 8                | 2.4                    | 4              | 2.5  |
|blaCTX-M9            | 1                | 0.3                    | 1              | 0.6  |
|blaCTX-M9 + blaCTX-M25| 65               | 19.7                   | 29             | 18.2 |

Table 3. Distribution of the blaTEM genotypes of ESBL-producing E. coli and K. pneumoniae.

| blaTEM genotypes     | E. coli (n=129) | K. pneumoniae (n=159) | TOTAL (n=288) |
|----------------------|-----------------|-----------------------|---------------|
|                     | Frequency (%)    | Frequency (%)          | Frequency (%)  |
|blaTEM               | 4                | 1.2                   | 6             | 3.8  |
|blaTEM + blaSHV      | 0                | 0.8                   | 10            | 2.0  |
|blaTEM + blaSHV + blaCTX-M    | 12             | 3.6                    | 1              | 0.8  |
|blaCTX-M             | 137              | 41.5                   | 75             | 47.2 |
|blaCTX-M + blaCTX-M   | 43               | 13.0                   | 23             | 14.5 |
|blaSHV + blaCTX-M     | 56               | 17.6                   | 8              | 5.0  |
|blaCTX-M + blaCTX-M25 | 39              | 11.8                   | 28             | 17.6 |
|blaCTX-M25            | 28               | 8.6                    | 17             | 9.2  |

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1469. Effect of Treatment Duration on Outcomes in Septic Patients Admitted for Urinary Tract Infections from Extended Care Facilities

Annilse Jongekri, PharmD; Candidate; Jamie George, PharmD; Pramodini Kale-Pradhan, PharmD; Leonard B. Johnson, MD; Wayne State University, Detroit, Michigan; Ascension St. John Hospital/Wayne State University, Detroit, Michigan; Wayne State University/Ascension St. John Hospital, Detroit, Michigan; Ascension St. John Hospital, Grosse Pointe Woods, Michigan

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Background. Adults in extended care facilities (ECFs) are at an increased risk of urinary tract infections (UTIs) with sepsis and there are little data on effective antibiotic duration. The purpose of this project was to assess the impact of inpatient antibiotic duration on clinical outcomes in these patients.

Methods. A single-center, retrospective study of adult, ECF, septic UTI patients from 5/1/16 to 4/30/18 were included. In-hospital mortality, 30-day readmission rate, and length-of-stay (LOS) were compared based on the effective antibiotic duration of short- and long-term therapies (≤ 5 and > 5 days, respectively). Pregnant and asymptomatic bacteriuria patients were excluded. Demographics, Charlson Weighted Index of Comorbidity (CWIC), presence of indwelling catheter, SIRS criteria, microbiologic results and antibiotic regimen were collected. Continuous variables were analyzed using Student’s t-test and categorical variables with Chi-square test.

Results. 105 of 1,158 ECF patients met the inclusion criteria. 38 patients received ≤ 5 days of effective antibiotic therapy, and 67 received > 5 days. Baseline demographics were similar, except the ≤ 5 days group were older and less likely to have fever (see table). In-hospital mortality was 18.4% in the short-term antibiotic group and 6.0% in the long-term group. Overall 30-day readmission was not significantly different. LOS was significantly greater in the > 5 day overall and non-bacteremia group.

Conclusion. Duration of antibiotics (≤ 5 and > 5 days) did not significantly affect 30-day readmission and in-hospital mortality; however, LOS was significantly longer in the > 5 days group. Further studies are needed to confirm these findings.

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