1451. Change in Clinical Characteristics of Community-Acquired Acute Pyelonephritis in South Korea: Comparison Between 2010–2011 and 2017–2018

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Background. The aim of this study was to examine the change in clinical characteristics of community-acquired acute pyelonephritis (CA-APN) in South Korea between 2010–2011 and 2017–2018.

Methods. We recruited all CA-APN patients with age ≥19 years who visited 4 hospitals in South Korea from September 2017 to August 2018, respectively. The inclusion criteria were: (i) presence of fever (body temperature ≥37.8°C), (ii) pyuria [urine white blood cells >25–9 white blood cells per high power field (WBC/HPF)], and (iii) clinical symptoms or signs relevant to APN. Patients diagnosed with APN more than 48 hours after admission, those transferred from other hospitals during treatment of APN, those with other reasons for fever and pyuria, and patients diagnosed with APN more than 145 days after hospital admission were excluded from the study. Patients were classified according to the use of carbapenem antibiotics and non-carbapenem antibiotics as definitive therapy between 2010–2011 and 2017–2018, respectively. E. coli was the most common causative pathogen for CA-APN in South Korea from September 2017 to August 2018 (10 vs. 8, <0.001). The median days of admission was higher for patients from 2010–2011 (15.40 ± 6.35 days in 2010–2011 to 21.74 ± 11.72 days in 2017–2018, P < 0.001). The median duration of antibiotic treatment increased significantly and total duration of antibiotic treatment and proportion of patients receiving carbapenem antibiotics was shorter for non-carbapenem group (median 9.93 days) than for carbapenem group (median 14.39 days) (< 0.001). The duration of negative conversion of culture was shorter for carbapenem group (median 40.73 days) than for non-carbapenem group (median 56.79 days). There was no significant difference in time to fever clearance and duration of definitive therapy between two groups.

Conclusion. Non-carbapenem therapy against APN with ESBL-producing Enterobacteriaceae has no significant difference in clinical outcome compared with carbapenem therapy.

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1452. Is Carbapenem-Sparing Therapy as Effective as Carbapenems Against Extended-Spectrum β-Lactamase Producing Enterobacteriaceae in UTI? Joonhoo Hynn, MD, MS1; Yongsoo Lee, MD, PhD2; Hye Seom, MD, PhD3; Jung Ho Kim, MD4; Nam Su Ku, MD, PhD1; Jun young Choi, MD, PhD1; Joon-Sup Yeom, MD, PhD5; Su Jin Jeong, MD, PhD2; Yonsei University College of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 2Department of Internal Medicine, Yonsei University College of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 3Department of Internal Medicine, Hanyang University College of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 4Gyeongsang National University Hospital, Gyeongsang National University School of Medicine, Jinju, Kyungang-namdo, Republic of Korea; 5Department of Internal Medicine, Soochunhyang University Colleage of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 6Division of Infectious Diseases, Department of Internal Medicine, Soonchunhyang University Seoul Hospital, Soonchunhyang University College of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 7Department of Infectious Diseases, Seoul National University Bundang Hospital, Bundang-gu, Seongnam, Gyeonggi-do, Republic of Korea; 8Department of Laboratory Medicine, Eulji University Medical Center, Eulji University Hospital, Gyeongsang National University College of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 9Department of Laboratory Medicine, School of Medicine, Keimyung University Dongsan Medical Center, Daejongwanyeoksi, Taegu-jikhaesi, Republic of Korea; 10Department of Laboratory Medicine, Gyeongsang National University Hospital, Gyeongsang National University School of Medicine, Jinju, Kyungang-namdo, Republic of Korea; 11Department of Laboratory Medicine, Soonchunhyang University Seoul Hospital, Soonchunhyang University College of Medicine, Seoul, Seoul-teukpyolsi, Republic of Korea; 12Department of Laboratory Medicine, Sungna-gu, Seoul-teukpyolsi, Republic of Korea

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Background. With the emergence of carbapenem-resistant strains of Enterobacteriaceae, non-carbapenem antibiotics are suggested as the alternative treatment of extended-spectrum β-lactamase (ESBL) producing Enterobacteriaceae infection. In this study, efficacy of non-carbapenem antibiotics on acute pyelonephritis (APN) with ESBL-producing Enterobacteriaceae was compared with that of carbapenems.

Methods. The medical records of patients who had diagnosed to have acute pyelonephritis with ESBL-producing Enterobacteriaceae on their urine culture, from January 2011 to December 2018, were reviewed retrospectively. Patients were classified as carbapenem and non-carbapenem group according to the definitive antibiotics they had treated with.

Results. Total number of patients was 141, including 112 (79.4%) who had received carbapenem, and 29 (20.6%) received non-carbapenem as definitive therapy against APN with ESBL-producing Enterobacteriaceae. The duration of hospitalization was shorter for non-carbapenem group (median 9.93 days) than for carbapenem group (median 14.39 days) (< 0.001). The proportion of patients receiving carbapenem increased from 6.1% in 2010–2011 to 26.6% in 2010–2011 (< 0.001). The median days of admission was higher for patients in 2010–2011 than those in 2017–2018 (10 vs. 8, < 0.001).

Conclusion. Non-carbapenem therapy against APN with ESBL-producing Enterobacteriaceae has no significant difference in clinical outcome compared with carbapenem therapy.

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1453. Cephalexin and Cefadroxil Are Not Therapeutic Equivalents for Uncomplicated Cystitis (uUTI): Further Analysis of Cefazolin Surrogate Susceptibility Testing Criteria

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Background. Cephalexin (CLEX) and cefadroxil are first-generation oral cephalosporins (OCs) with similar antimicrobial spectrums, side-effects, and high urine concentrations; and are US-FDA approved for uUTI. Some stewardship programs are replacing CLEX with cefadroxil (4 × daily) for dosing convenience. The US Committee on Antimicrobial Susceptibility Testing (USCAST) and CLSI recommend a cefazolin (CZOL) UTT surrogate breakpoint (≤16 mg/L; ≥20 mm) to predict susceptibility (S) for 7 OCs against indicated Enterobacteriaceae. Direct cefadroxil antimicrobial susceptibility (AST) testing (AST) does not exist in US breakpoint interpretive documents, limiting specific results.

Methods. We reanalyzed and compared the CZOL surrogate testing for cefadroxil, CLEX and 5 other OCs using AST data previously reported (Schuetz et al., 2013. JHMA). Broth microdilution AST was used against 205 isolates: E. coli (92.40% with β-lactamase), K. pneumoniae (62), P. mirabilis (31; 10% with β-lactamase), and other enteric bacilli (20). A CZOL surrogate S breakpoint (≤16 mg/L) was used to infer S for OCs.

Results. CZOL X cefadroxil cross-S accuracy rate was only 91.6% (unacceptable; ε 95%) and the false resistance was 1.0% (acceptable). Cross-S accuracy was inferred S for OC’s.

Cefazolin (CZOL) X cefadroxil cross-S accuracy rate was only 91.6% (unacceptable; ε 95%) and the false resistance was 1.0% (acceptable). Cross-S accuracy was inferred S for OC’s.
the current (2019) US-FDA website document states "cefaadroxil may be deduced from CZOL" regardless of clinical indication.

**Conclusion.** Cefadroxil -S for guiding uUTI therapy cannot be accurately predicted by CZOL results at ≤16 mg/L (inaccurate surrogate accuracy and compromised spectrum/potency). Furthermore, direct cefadroxil AST does not exist in United States due to lack of breakpoint criteria (CLEX, USCAST) and reagent materials (MIC products or disks). CLEX or other OC’s remain preferred, more active (table) uUTI treatment choices having quality direct or surrogate AST guidelines.

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1455. Epidemiology, Empiric Treatment, and Outcomes Among Hospitalized Patients With Complicated Urinary Tract Infections in the United States, 2013–2018
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**Background.** Complicated urinary tract infection (cUTI) is common among hospitalized patients. Though carbapenems are an effective treatment in the face of rising resistance, overuse drives carbapenem resistance (CR). We hypothesized that resistance to routinely used antimicrobials is common, and, despite the frequent use of carbapenems, associated with an increased risk of inappropriate empiric treatment (IET), which in turn worsens clinical outcomes.

**Methods.** We performed a multicenter retrospective cohort study in ~180 hospitals in the Premier database, 2013–2018. Using an ICD-9/10-based algorithm we identified all adult patients hospitalized with cUTI and a positive blood or urine culture (CR excluded). We examined with the impact of triple resistance (TR: resistance to >3 antibiotics, often carbapenems and other classes). Our primary outcome was IET. We performed a multivariable Cox regression for IET and adjusted for race, sex, CR, and tricomplicated resistance status.

**Results.** Among 23,331 patients with cUTI (96.2% community-onset), 3,040 (13.0%) had a TR pathogen. Compared with those with non-TR, patients with TR were more likely male (57.6% vs. 47.7%), black (17.9% vs. 13.6%), and in the South (46.3% vs. 41.5%), P < 0.001 each; had a higher median Charlson score (3 vs. 2), and were more likely to need early ICU (22.3% vs. 18.6%) and mechanical ventilation (7.0% vs. 5.0%), P < 0.001 each. Patients with TR were hospitalized at centers with higher median prevalence of both CR (16.3% vs. 14.4%) and TR (15.1% vs. 12.2%), P < 0.001 each. IET was more frequent in TR than non-TR group (19.6% vs. 13.4%) despite greater carbapenem use in TR (43.3% vs. 16.2%, P < 0.001 each). Though IET did not have an impact on adjusted hospital mortality or 30-day readmission rate, it was associated with excess adjusted resource utilization ($8,364 in costs and 0.66 day in length of stay).

**Conclusion.** Among hospitalized patients with cUTI, TR is common, and is associated with a nearly 4-fold increase in exposure to IET, which in turn contributes to excess resource utilization. Given the high prevalence of TR, clinicians should consider a lower threshold for broader empiric treatment in appropriate patients.

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1456. Increase in Resistance to Antibiotics in Enterobacteriaceae from Ambulatory Urinary Samples in Buenos Aires City

**Background.** During the last years, an increase in the rates of resistance among causal agents of urinary tract infection (UTI) has been reported, even in community-acquired infections. This increase in resistance is problematic since it affects most therapeutic agents used in the ambulatory setting and often implies the lack of oral options for treatment. The aim of this study was to determine whether there were changes in the prevalence of resistance among samples from patients with UTI in the ambulatory setting caused by the most common Enterobacteriaceae.

**Methods.** We analyzed the resistance profiles of the three most common Enterobacteriaceae recovered in cultures from urinary samples of ambulatory adult patients, processed in a reference Laboratory in Buenos Aires City; according to