

antibiotic armamentarium for UTI treatment may delay the development of resistance to non-β-lactam antibiotics, ensuring their future utility.

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1426. Empiric Antimicrobial Prescribing for Urinary Tract Infections in Patients Discharged from the Emergency Department

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EMPHARM-NET

Session: P-81. UTIs

Background. Urinary tract infections (UTIs) are commonly treated infections in the emergency department (ED), accounting for 3 million visits annually and 15% of outpatient antibiotic prescriptions. The purpose of this study was to characterize empiric and definitive antimicrobial therapy for treatment of UTIs in a nationally representative sample of ED patients.

Methods. This was a multicenter, retrospective cohort study utilizing the Emergency Medicine PHARMacy Research NETWORK (EMPHARM-NET), a network of 15 geographically diverse EDs. Patients ≥18 years presenting to and discharged home from the ED with primary diagnosis code of cystitis, pyelonephritis, or UTI from 2018-2020 were included. We describe empiric intravenous (IV) and oral antibiotics used for the treatment of UTI in patients seen and discharged from the ED.

Results. Of the 3779 ED patients treated for UTI, most were discharged from the ED (n=2483, 66%). Most patients were female (76.3%) and common comorbidities were hypertension (47.8%) and diabetes (26.5%). Most patients had uncomplicated (39.4%) or complicated (40.9%) cystitis. 1134 (45.6%) had a positive urine culture, most commonly *E. coli* (63%) and *K. pneumoniae* (13%). The most common antibiotics administered in the ED were ceftriaxone (19.7%), nitrofurantoin (6.2%), cephalexin (5.8%), and sulfamethoxazole/trimethoprim (SMX/TMP, 4.8%). The most common antibiotics prescribed at discharge were cephalexin (33.9%), nitrofurantoin (20.6%), SMX/TMP (12%), ciprofloxacin (8.2%), and cefdinir (8%). The mean length of treatment was 7.1 days (standard deviation 2.5 days). Overall, 454 patients returned to the ED within 30 days. The odds of returning to the ED within 30 days was higher in those that did not have appropriate empiric antibiotics based on susceptibilities (OR 1.37, 95% confidence interval 1.06, 1.78).

Conclusion. This multicenter, retrospective cohort study describes ED patients discharged from the ED after UTI diagnosis. Patients presented most commonly for cystitis. Nearly half of discharged patients were culture positive. Antimicrobial selection varied; IV ceftriaxone and oral cephalexin were most commonly empirically utilized to treated patients with UTI. Inappropriate antimicrobial selection increased odds of a return ED visit within 30 days.

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1427. Healthcare Resource Utilization During Hospitalizations with UTI in the US, 2018

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Background. Urinary tract infection (UTI) as the reason for hospitalization costs the US healthcare system nearly \$3 billion annually, and is on the rise. We set out to explore the full burden of UTI hospitalizations in the US, including admissions both for UTI and with UTI.

Methods. We conducted a cross-sectional multicenter study within the National Inpatient Sample (NIS) database, a 20% stratified sample of discharges from US hospitals, from 2018, to explore hospital resource utilization of patients discharged with a UTI diagnosis. We divided UTI into mutually exclusive categories of complicated (cUTI), uncomplicated (uUTI), and catheter-associated (CAUTI), in addition to healthcare-associated (HAUTI). We calculated unadjusted hospital charges, costs, average reimbursements, and length of stay (LOS) associated with these infections.

Results. Among 2,837,385 discharges with a UTI code, 77.9% were uUTI, 17.6% cUTI (80.2% HAUTI), and 4.4% CAUTI; UTI was principal diagnosis in only 17.0%. Median [interquartile range, IQR] LOS ranged from 4 [3-8] days in uUTI and cUTI to 5 [3-9] days in CAUTI. Overall median [IQR] hospital charges and costs were lowest in uUTI (\$36,335 [\$19,920-\$70,745]) and \$8,898 [\$5,408-\$16,092], respectively) and highest in cUTI (\$39,690 [\$21,997-\$75,739]) and \$9,713 [\$5,923-\$17,423], respectively), with the HAUTI subgroup being most costly (\$44,650 [\$24,642-\$85,628]) and \$10,945 [\$6,573-\$19,634], respectively). "Septicemia or Severe Sepsis without MV >96 Hours with MCC" was the most common DRG in uUTI (13.2%) and cUTI (14.2%), with the corresponding median [IQR] reimbursements of \$11,057 [\$7,028-\$17,757] and \$12,226 [\$7,889-\$19,216], respectively. In contrast, CAUTI was most commonly (44.7%) reimbursed under "Kidney and Urinary Tract Infections without MCC" at \$8,635 [\$5,693-\$13,718].

Conclusion. The nearly 3 million hospital admissions with a UTI represent 8% of all annual admissions in the US. Though the majority are considered uncomplicated, all categories are nearly equally costly. Given that over 80% of all UTI-associated admissions are with UTI as a secondary diagnosis, annual estimates of primary UTI costs likely significantly underrepresent the true economic burden of UTI on the US healthcare system.

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1428. Increased Consumption of Pivmecillinam in Primary Care for Uncomplicated Urinary Tract Infection (uUTI) Is Not Associated With Increased Resistance Rates

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Background. The evolution of antibiotic resistance in *Escherichia coli* (*E. coli*) hampers the treatment of UTIs, mirroring the global public health concerns around antimicrobial resistance. Pivmecillinam, an oral prodrug of mecillinam (a β-lactam antibiotic), is used as first-line treatment for uUTIs in Denmark. Here, we examine the use of, and the prevalence of resistance to, mecillinam in Denmark in the primary care setting.

Methods. Nationwide data on the use of and resistance to pivmecillinam (reported as its active form, mecillinam) was extracted and examined from the Danish Integrated Antimicrobial Resistance Monitoring and Research Programme (DANMAP) 2019 report (www.danmap.org). Prevalence estimates of resistance reported by DANMAP 2019 were obtained from the Danish Microbiology Database (MiBA).

Results. In 2019, pivmecillinam accounted for about 27% of penicillins and 75% of penicillins with extended spectrum consumed in primary healthcare in Denmark. Pivmecillinam usage has increased primarily due to changes in recommendations for the treatment of uUTIs. Between 2010 and 2019, pivmecillinam usage in Denmark increased by 45% from 1.67 to 2.43, defined as daily doses per 1,000 inhabitants per day. In 2019, analysis of 83,850 urinary isolates from patients in the primary care setting with *E. coli* revealed a 5.3% resistance rate to mecillinam. Time-trend analysis using data from a 10-year period showed a small but significant decrease from the 5.5% resistance rate recorded in 2010 (p=0.001). In general, in spite of increasing use in Denmark, the development of resistance to pivmecillinam has remained low. In fact, a slight decline in pivmecillinam resistance was observed over the past decade.

Conclusion. Despite the rising number of UTIs and the increasing use of pivmecillinam for uUTI in Denmark, over the past decade, the development of resistance to pivmecillinam remains low.

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1429. Real-World Study of Patients with Uncomplicated Urinary Tract Infection in the United States: High-Risk Comorbid Conditions and Burden of Illness

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Background. Urinary tract infections (UTIs) are associated with significant morbidity and economic burden, particularly in the elderly and patients with comorbidities. We used real-world data (RWD) to assess healthcare resource use (HRU) and costs in patients with uncomplicated UTI (uUTI) and high-risk comorbid conditions in the US.

Methods. This was a retrospective cohort study (IBM MarketScan RWD, commercial/Medicare Supplemental claims January 1, 2014–December 31, 2017) of females ≥ 12 years of age with uUTI who had an oral antibiotic prescription ± 5 days of uUTI diagnosis (index date) and continuous health-plan enrollment for ≥ 1 year pre-/post index date. Five high-risk cohorts and matched-control cohorts (baseline age, region) were identified: controlled type 2 diabetes (T2D), mild/moderate chronic kidney disease (CKD), recurrent UTI (rUTI), elderly (ELD), and postmenopausal (PMP) (Table 1). Sample sizes were balanced via random match selection (1:5 case:control). uUTI-related HRU and costs were compared between cases and controls (index episode/1-year follow-up) using multivariable generalized linear models.