1414. Real-World Study of Healthcare Resource Use and Costs Associated with Inappropriate and Suboptimal Antibiotic Use Among Females with Uncomplicated Urinary Tract Infection in the United States

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Session: P-81. UTIs

Background. Urinary tract infections (UTIs) are the most common outpatient infection requiring medical care in the US, but, despite Infectious Diseases Society of America 2011 guidelines for treating uncomplicated UTI (uUTI), variation in prescribing practices still exists. Few studies have used real-world data (RWD) to evaluate uUTI-associated healthcare resource use (HRU) and costs. We examined HRU and direct costs associated with appropriate and optimal (AP&OP) and inappropriate or suboptimal (IA/SO) antibiotic (AB) prescribing in females with uUTI using US RWD.

Methods. This retrospective cohort study used RWD from IBM MarketScan (commercial/Medicare claims) to examine uUTI-related HRU and costs (inpatient, emergency room, outpatient, pharmacy) per index uUTI episode and during 1-year follow-up among females (age ≥12 years) diagnosed with uUTI from July 1, 2013–December 31, 2017 (index date). Patients had an oral AB prescription ≥5 days of the index date, and continuous health plan enrollment ≥6 months pre/1 year post-index date; those with complicated UTI were excluded. Patients were stratified by AB prescription as follows: AP&OP = guideline-compliant and correct duration; IA/SO = guideline non-compliant/incorrect duration or re-prescription switch within 28 days.

Results. The study included 557,669 patients. In the commercial population (n=517,664, mean age 37.7 years), fewer patients were prescribed AP&OP (11.8%) than IA/SO (88.2%) ABs, a trend also seen in the Medicare population (n=40,005, mean age 74.5 years). In both populations, adjusted average numbers of uUTI-related healthcare resource use (HRU) and costs were more likely to incur higher HRU and costs than those prescribed AP&OP ABs, suggesting an unmet need for training to optimize uUTI prescribing per US guidelines.

1415. Allergies to Antimicrobial Agents Among US Females with Uncomplicated Urinary Tract Infection

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Session: P-81. UTIs

Background. Uncomplicated urinary tract infections (uUTI) are generally treated empirically with antibiotics. However, antibiotic (AB) allergies limit the available oral treatment options for some patients. We assessed the proportion of self-reported AB allergies among US females with uUTI.

Methods. We performed a cross-sectional survey of US females ≥18 years of age with a self-reported urinary tract infection (UTI) in the 60 days prior to participation and a prescription of oral AB. Participants were further screened for evidence of a complicated urinary tract infection and, after exclusions, participants with a uUTI completed an online questionnaire about their most recent episode. Participants were from the Northeast (20%), Midwest (44%), South (20%), and West (16%) US. Descriptive self-reported allergy data were stratified into subgroups by whether the participant had recurrent UTI (defined as ≥2 uUTIs in the past 6 months or ≥3 uUTIs in past 12 months including index UTI), the number of different ABs given for the index episode (1, 2, or ≥3), and whether the treatment was clinically appropriate according to Infectious Diseases Society of America uUTI guidelines.

Results. Overall, 375 female participants completed the questionnaire. The most commonly prescribed ABs for participants’ most recent uUTI were trimethoprim-sulfamethoxazole (TSM-SMX, 38.7%), ciprofloxacin (22.7%), and nitrofurantoin (18.9%) (Table 1). Most participants received only 1 AB for their uUTI (62.7%) and the majority were classified as having a non-recurrent uUTI (56.5%). No AB allergies were reported for most participants (69.3%); overall, 24.0% reported 1 AB allergy and 6.7% reported ≥2 allergies in the recurring or multi-AB subgroups. The most commonly reported AB allergy was to TMP-SMX, which was the most prescribed AB (38.7%) for participants’ most recent uUTI.

Table 1. Antibiotics used to treat most recent uUTI (N=375)

| Antibiotic                          | n (%)  |
|------------------------------------|--------|
| Trimethoprim-sulfamethoxazole       | 145 (38.7) |
| Ciprofloxacin                      | 85 (22.7)  |
| Nitrofurantoin                     | 71 (18.9)  |
| Cefaxolin                          | 56 (14.9)  |
| Amoxicillin-clavulanate            | 35 (9.3)    |
| Levofloxacin                       | 11 (2.9)     |
| Cefotaxin                          | 10 (2.7)     |
| Ceftriaxone                        | 5 (1.3)      |
| Fondamycin                         | 2 (0.5)      |
| Cefaclor                           | 0        |
| Cefpodoxime-proxacetil             | 0        |

uUTI, uncomplicated urinary tract infection.

Table 2. Frequency of antibiotic allergies across cohort subgroups

| Antibiotic | Allergies | Recurring ≥2 uUTIs | Multi-AB | Recurring ≥2 uUTIs & Multi-AB |
|------------|-----------|-------------------|----------|-----------------------------|
| Ciprobactin| 0.2%      | 0.6%              | 2%       | 0.8%                        |
| Cipro      | 0.9%      | 1.3%              | 2.3%     | 1.5%                        |
| Nitro      | 0.9%      | 1.3%              | 2.3%     | 2%                          |
| Cefazolin  | 0.2%      | 0.6%              | 2%       | 1%                          |
| Amoxicillin| 0.2%      | 0.6%              | 1.3%     | 0.6%                        |
| Levoflox   | 0.2%      | 0.6%              | 1.3%     | 0.6%                        |
| Ceftriaxin | 0.2%      | 0.6%              | 1.3%     | 0.6%                        |
| Cefoperaz  | 0.6%      | 0.3%              | 2%       | 1.3%                        |
| Cefpox     | 0.6%      | 0.3%              | 2%       | 1.3%                        |

*Defined as any one time point on AB used for treatment of uUTI. Defined as any one prescription of AB used in treatment of uUTI.*

Conclusion. AB allergies were relatively frequent in this uUTI cohort and the most prescribed AB was TSM-SMX, which was the most prescribed AB. Allergies to ABs reduce the available treatment options for uUTI in some patients.

Disclosures. Jeffrey Thompson, PhD, Kantar Health (Employee, Employee of Kantar Health, which received funding from GlaxoSmithKline plc to conduct this study).
1416. Medicare Spending on Urinary Tract Infections: A Retrospective Database Analysis
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Session: P-81. UTIs

Background. Medical visits for UTIs represent 1%-6% of all healthcare visits (~7 million visits) and are estimated to cost the United States (US) healthcare system at least $1.6 billion annually. UTIs are associated with significant morbidity; particularly among the elderly, where UTIs are most prevalent. Little is known about the specific costs to Medicare of UTI; here, we seek to examine overall Medicare spending on UTI.

Methods. We conducted a retrospective multiconter cohort study of the Medicare fee-for-service (FFS) data. Patients were included for analysis if the following criteria were met: (1) enrolled in Medicare FFS from January 1, 2016 through December 31, 2019, (2) not enrolled in Medicare Advantage during that time period, (3) did not have any UTI diagnoses in 2016, and (4) enrolled in Medicare Part D. Individuals were categorized as having uncomplicated UTI (uUTI), complicated UTI (cUTI), or those who had a uUTI that progressed to a cUTI (uUTI to cUTI). Medicare spending in the 12 months post-diagnosis was calculated, and patients were stratified by home- or institution-based (eg, nursing home, long-term care facility, etc.).

Results. 2,330,123 patients were included for analysis; 92% were home-based, 8% were institutionally-based. Mean Charlson Comorbidity Index (CCI) across all patients was 2.16. In the 12 months after initial diagnosis, average Medicare spend was $33,984, $9,941 of which was UTI-related. Annual UTI-related costs were approximated $9,000 for home-based vs. $21,444 for institutionally-based patients. Mean drug costs to Medicare of UTI; here, we seek to examine overall Medicare spending on UTI.

Table 1: UTI Background and Distribution of Antibiotics for Treated Patients

| Diagnosis          | Total | AR | Uncomplicated UTI | Complicated UTI | Complicated UTI - Other | No UTI |
|--------------------|-------|----|-------------------|-----------------|-------------------------|--------|
| n (%)              |       |    |                   |                 |                         |        |
| Diabetic            | 72    | 39 | 32 (44)           | 10 (14)         | 10 (14)                 | 3 (5)  |
| Antibiotic duration (days median [range for uUTI]) | 10 (7-14) | 10 (7-12) | 14 (10-14) | 7 (7-14) | 17 (20-40) | 7 (7-30) |
| Treatment Setting   |       |    |                   |                 |                         |        |
| Outpatient (%)      | 30    | 15 | 5 (17)            | 10 (33)         | 5 (17)                  | 10 (33) |
| Inpatient (%)       | 42    | 4  | 1 (3)             | 3 (7)           | 1 (3)                   | 4 (9)  |
| Diarrhea            |       |    |                   |                 |                         |        |
| No UTI (%)          | 39    | 26 | 12 (31)           | 10 (26)         | 12 (31)                 | 10 (26) |
| UTI (%)             | 38    | 3  | 1 (3)             | 2 (6)           | 1 (3)                   | 3 (9)  |

Conclusion. UTI-related spending represents approximately one-third of total annual Medicare cost for patients diagnosed with a UTI. Given average Medicare spending of approximately $12,000 per person in 2019, UTI is associated with substantially increased per patient cost and represents a significant source of spending for Medicare.

Disclosures. Kate Sulham, MPH, Spero Therapeutics (Consultant) Eric Hammelman, MBA, AbbVie Pharmaceuticals (Consultant) Edwards Lifesciences (Consultant) Genentech (Consultant) Spero Therapeutics (Consultant) Vertex Pharmaceuticals (Consultant)

1417. Fosfomycin Use in the Treatment of Complicated Urinary Tract Infections at a Veterans Affairs Medical Center
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Session: P-81. UTIs

Background. The prevalence of multidrug resistant gram-negative urinary tract infections (UTIs) is increasing, often requiring intravenous antimicrobial therapy. Oral fosfomycin is a recommended alternative agent for the treatment of cystitis caused by extended-spectrum beta-lactamase (ESBL)-producing Escherichia coli (E. coli). The primary objective of this study is to evaluate the efficacy of fosfomycin in the treatment of UTIs at the Veterans Affairs Long Beach Healthcare System. The secondary objective is to assess the incidence of adverse drug reactions associated with fosfomycin.

Methods. This is a retrospective, single-center, cohort study. Patients who received fosfomycin between June 1st, 2015 – June 30th, 2020, were included. Data collection was completed by chart review through the Computerized Patient Record System (CPRS). Descriptive analysis was used to evaluate data. Treatment outcomes were analyzed using a composite of clinical and microbiological cure. Clinical cure was defined as resolution of UTI symptoms. Microbiological cure was defined as urine sterility within 1 month after completing treatment course with fosfomycin.

Results. A total of 62 unique patients were evaluated in this study. The mean age was 71.9 years. 56 patients (90.3%) were male, 31 patients (50.0%) had an indwelling catheter present at the time of treatment, and 48 patients (77.4%) had the presence of genitourinary tract pathology that may increase the risk of developing UTIs. Majority of patients (50.0%) had a urine culture result positive for E. coli prior to treatment, of which 43.5% were ESBL-producing. 60 patients (96.8%) received more than 1 dose of Fosfomycin. Out of 29 patients who were eligible to be evaluated for clinical outcomes, 20 patients (68.9%) met a positive composite outcome of either microbiological cure, clinical cure, or both. 4 patients (6.5%) experienced an adverse drug reaction of diarrhoea that was self-limited.

Conclusion. Fosfomycin is an effective and well-tolerated antimicrobial agent that may be considered for treatment of complicated UTIs without evidence of pyelonephritis or bacteremia caused by multi-drug resistant organisms in the veteran population.

Disclosures. All Authors: No reported disclosures

1418. Single Center Treatment Patterns for Asymptomatic Bacteriuria and UTIs in Kidney Transplant Recipients: Are We Still Overtreating?
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Session: P-81. UTIs

Background. In February 2019, the American Society of Transplantation (AST) published guidelines on the management of asymptomatic bacteriuria (AB) and urinary tract infections (UTIs) in kidney transplant (KT) recipients. These recommendations include avoiding treatment of AB > 2 months post-transplant and outline the duration of treatment (DT) for uncomplicated and complicated UTIs. We reviewed management of these syndromes and guideline concordance at our institution.

Methods. We conducted a single-center, retrospective cohort study of KT recipients age > 18 years who underwent transplantation between January 2016 - June 2020. Patients were obtained through query of our electronic medical record for documented UTI syndromes and included if a diagnosis was confirmed between March 2019 - December 2020 upon chart review. Definitions of AB, complicated UTI, and uncomplicated UTI were based on AST definitions. Patients with AB < 2 months post-transplant were excluded. Outcomes included treatment of AB, DT, 30-day hospital admission and re-admission, and 30-day mortality. Bivariate analysis was conducted using chi square and t test.

Results. Seventy-four patients (mean age 55.4 years, 62.0% female) were included. Twenty-one patients had AB, 90% of whom received antibiotics. Distribution of diagnoses and median DT among those treated with antibiotics is outlined in Table 1. Overall DT was similar in patients whose care included infectious disease (ID) input and those who did not (10.0 vs. 10.0 days, p=0.12), although ID involvement was more common in complicated UTIs. There was no difference in 30-day admission rates for those receiving < 7 days vs. > 7 days of antibiotics (p=0.53) (Table 2) including those with complicated UTIs (5/15 vs. 7/14 days, 33%) vs. /18 in > 7 days (22%) (p=0.49). There were no deaths within 30 days of diagnoses.

Table 1: UTI Background and Distribution of Antibiotics for Treated Patients

| Diagnosis | Total | AR | Uncomplicated UTI | Complicated UTI | Complicated UTI - Other | No UTI |
|-----------|-------|----|-------------------|-----------------|-------------------------|--------|
| n (%)     |       |    |                   |                 |                         |        |
| Diabetic   | 72    | 39 | 32 (44)           | 10 (14)         | 10 (14)                 | 3 (5)  |
| Antibiotic duration (days median [range for uUTI]) | 10 (7-14) | 10 (7-12) | 14 (10-14) | 7 (7-14) | 17 (20-40) | 7 (7-30) |
| Treatment Setting |       |    |                   |                 |                         |        |
| Outpatient (%) | 30    | 15 | 5 (17)            | 10 (33)         | 5 (17)                  | 10 (33) |
| Inpatient (%) | 42    | 4  | 1 (3)             | 3 (7)           | 1 (3)                   | 4 (9)  |

Conclusion. Despite guidelines, treatment of AB is common and uncomplicated UTIs often receive prolonged courses of antibiotics. There was no increased risk of admission or mortality with shorter DT, though these results should be interpreted cautiously given the small sample size. Greater stewardship efforts are needed in this high-risk population.

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1419. High Prevalence of Fluoroquinolone-Resistant Urinary Tract Infection Among US Emergency Department Patients Diagnosed with UTI, 2018-2020
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