

Disclosures. H. S. Sader, Allergan: Research Contractor, Research support. M. Castanheira, Allergan: Research Contractor, Research support. R. E. Mendes, Allergan: Research Contractor, Research support. R. K. Flamm, Allergan: Research Contractor, Research support.

1524. Are Providers Shifting from NTF to Fosfomycin for Inpatient UTI? Big Data Reveals Small Shifts

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Session: 150. Urinary Tract Infection
Friday, October 5, 2018: 12:30 PM

Background. Fosfomycin (FOS) and NTF (NTF) are IDSA guideline approved drugs for acute cystitis in women. However, their activity against multi drug-resistant Gram-negatives may be driving increased use among inpatients with more complicated UTI. We evaluated trends in inpatient prescribing of these UTI-specific agents in the predominantly male population of the national VA system over a 7-year period.

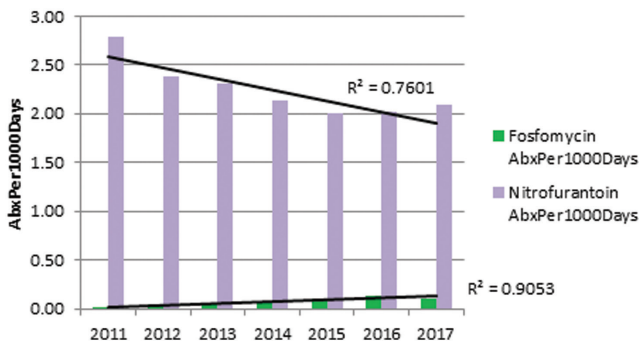
Methods. All inpatient bar coded administrations for FOS and NTF at every VA facility nationwide from 2011 to 2017 were captured through a data analytics platform which extracts data from the VA Data warehouse. Antibiotic days of therapy and rates per 1,000 patient-days (DOT/1,000CD) were extracted by year and compared using Mantel-Haenszel chi square for linear trend (MH OR). Demographics were captured via administrative data.

Results. Prescriptions from over 65 million patient-days spanning 7 years and all inpatient units in 129 VA facilities were included. Approximately 90% of patients were male with a mean age range of 55-64 years. FOS use increased from 128 prescriptions in 2011 to a high of 1,230 in 2016 and 1,003 in 2017 (figure). At the maximum in 2016, prescription rates increased almost 10-fold compared with 2011 (MH OR 9.8, $P < 0.001$). NTF prescriptions declined from 26,590 in 2011 to 19,343 in 2017. Rates decreased 25% from 2.8 to 2.1, MH OR 0.75, $P < 0.001$. In 2017, FOS and NTF usage rates were highest in rehabilitation/spinal cord units (table).

Conclusion. In this large nationwide cohort, FOS use increased almost 10-fold among predominantly male inpatients while NTF use declined slightly. NTF is still used orders of magnitude more than FOS, even after adjusting for extended days of activity of FOS. Both agents retain activity against many MDR GNRs but differences in efficacy, tissue penetration, familiarity and availability likely influence the choice for oral UTI-specific treatment.

2017 Data	ICU	MEDSURG	NH	PSYCH	REHAB/SCI
FOS DOT/1,000CD	0.06	0.15	0.07	0.03	0.73
NTF DOT/1,000CD	0.56	1.46	2.41	2.55	9.35
FOS days	28	382	229	28	315
NTF days	251	3,699	7,826	2,634	4,013

National Trends in Inpatient Fosfomycin and Nitrofurantoin Usage



Disclosures. All authors: No reported disclosures.

1525. Evaluation of Clinical Outcomes With Fosfomycin for E. coli and Non-E. coli Enterobacteriaceae Urinary Tract Infections

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Session: 150. Urinary Tract Infection
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Background. Fosfomycin is a broad-spectrum oral antibiotic increasingly used for the treatment of uncomplicated and complicated urinary tract infections (UTIs). The Clinical and Laboratory Standards Institute (CLSI) does not support fosfomycin susceptibility testing on urinary isolates outside of *Enterococcus faecalis* and *Escherichia coli*. This is in light of building evidence and concern for the presence of chromosomal *fosA* gene in non-*E. coli* Enterobacteriaceae. Regardless, clinicians have continued to test and use fosfomycin for these pathogens due to multidrug resistance or intolerance to other agents without ample data on clinical implications.

Methods. This retrospective study included patients who received fosfomycin for the treatment of a UTI caused by any Enterobacteriaceae for which fosfomycin testing was performed from March 2016 through April 2018. We separated patients who received fosfomycin for the treatment of UTIs caused by *E. coli* from those caused by other Enterobacteriaceae for comparison. The primary outcome is the rate of clinical success at 48 hours, defined as the absence of UTI symptoms and normalization of vital signs. The secondary outcome is the rate of recurrent UTIs caused by the same pathogen within 30 days of the index infection.

Results. There were 28 separate episodes of *E. coli* UTIs in 24 patients and 25 separate episodes of non-*E. coli* UTIs in 26 patients included into this study. Patients were mostly balanced between the two groups and were on average about 64 years old, mostly females (61%), and had an average Charlson Comorbidity Index of 5. All *E. coli* isolates were susceptible to fosfomycin, while only 82.8% non-*E. coli* isolates were fosfomycin-susceptible. The rates of clinical success were similar between the *E. coli* and non-*E. coli* groups (89.3% vs. 88.5%). There was a higher rate of recurrence of the same UTI with *E. coli* (15.4%) than with non-*E. coli* (4.8%).

Conclusion. Findings from this small study suggest favorable outcomes with use of fosfomycin for non-*E. coli* Enterobacteriaceae. Despite recommendations against testing and use of fosfomycin in these pathogens, it appears that *in vitro* resistance does not always correlate with clinical response.

Disclosures. All authors: No reported disclosures.

1526. Oral Fosfomycin Use for Urinary Tract Infections and Its Clinical Impact on Hospital Stay

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Session: 150. Urinary Tract Infection
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Background. Oral fosfomycin is a treatment option for urinary tract infections (UTI) caused by multi-drug-resistant organisms (MDRO). The objective of the study was to describe the prescribing pattern of fosfomycin and determine its role in (1) preventing hospital admissions for patients seen in the emergency department or (2) promoting earlier discharges for admitted patients.

Methods. This retrospective chart review evaluated adults that received at least one dose of fosfomycin during the period 2014-2017. Information was collected using electronic medical records (e.g., demographics, symptoms, dose/duration of fosfomycin, urine culture results, length of stay, and hospital readmission). Statistical analysis was performed using descriptive statistics.

Results. Forty-three patients were included (60.5% females). Nearly half of the population (48.8%) had a history of recurrent UTIs. Patients received fosfomycin for cystitis (58.1%), pyelonephritis (34.9%), and asymptomatic bacteriuria (7%). Only two patients received >1 dose. Empiric use of fosfomycin was seen in only 9.3%. Of those treated based on culture results, 84.6% of patients had MRDOs (29 ESBL, 2 VRE, 1 KPC, 1 resistant-*Pseudomonas*). No isolates had fosfomycin susceptibilities performed. In 72% of the time, patients had no other oral options. In 74.3% of the time, fosfomycin was used as step-down therapy from intravenous (IV) antibiotics (e.g., carbapenems 69%, ceftriaxone 13.8%). Infectious Diseases was consulted on 81.4% of cases. Seven percent of patients had documented allergies to the preferred agent. Treatment success was seen in 93% of patients, while three patients failed treatment requiring readmission for IV therapy. Fosfomycin use resulted in earlier discharge in 75.8% of cases (range of 1-6 days, mean 2.92 hospital days avoided per patient). For those who received fosfomycin as part of their emergency visit, 90% (9 of 10) were able to avoid hospitalization.

Conclusion. In our study, fosfomycin was used in UTI caused by MRDOs, with treatment successfully demonstrated in a majority of patients. Fosfomycin allowed for patients to avoid hospitalization or promoted earlier discharge, on average 3 days sooner than anticipated. Use of fosfomycin should be considered in appropriate patients in an effort to decrease length-of-stay or altogether avoid hospitalization.

Disclosures. All authors: No reported disclosures.

1527. The Prevalence of Enterobacteriaceae (ENT) Resistant to All Major Classes of Oral Antibiotics from Outpatient Urine Cultures in the United States and Effect on Clinical Outcomes

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Session: 150. Urinary Tract Infection
Friday, October 5, 2018: 12:30 PM

Background. Over 99% of all outpatient urinary tract infections (UTI) in the United States are treated with either a quinolone, β -lactam, trimethoprim-sulfamethoxazole (T/S) or nitrofurantoin (NFH). Resistance to all classes of antibiotics is now