

Healthcare Resource Use and Costs Associated With Oral Antibiotic Treatment Failure in Uncomplicated Urinary Tract Infection in the US

Presentation EE548

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Introduction

- Urinary tract infections (UTIs) are among the most common bacterial infections worldwide¹
- Despite the availability of a variety of antibiotics for the treatment of uncomplicated UTI (uUTI),² many patients still experience treatment failure³
- Treatment failure in uUTIs has a public health impact, as additional antibiotic prescriptions can lead to antibiotic resistance, drug-related adverse events, and increased healthcare costs in female patients with uUTI^{1,3}
- This study assessed the burden of oral antibiotic treatment failure in female outpatients with uUTI in the United States (US)

Methods

- This retrospective cohort study used data from Optum’s de-identified Clinformatics Data Mart Database (Commercial and Medicare Advantage plans) for patients with ≥ 1 claim and a primary or secondary diagnosis of uUTI (ICD-10-CM diagnosis codes N30.00, N30.01, N30.90, and N39.0) in an outpatient office or outpatient emergency room setting between October 1, 2016, and September 30, 2020 (**Figure 1**)
- Key eligibility criteria for the study are described in **Table 1**

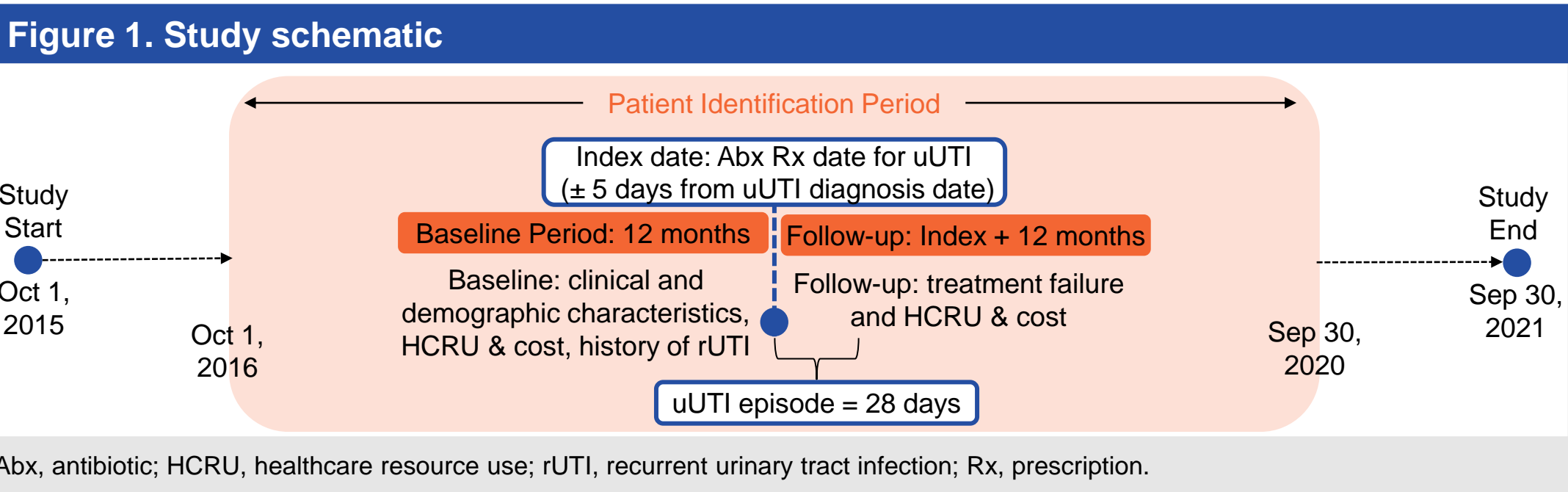


Table 1. Key eligibility criteria for the study	
Key inclusion criteria	Key exclusion criteria
<ul style="list-style-type: none">FemaleAged ≥ 18 years≥ 1 outpatient uUTI diagnosis between October 10, 2016 and September 9, 2020Oral antibiotic prescription within ± 5 days of diagnosis≥ 1 year of continuous health plan enrollment pre- and post-index date	<ul style="list-style-type: none">Evidence of complicated UTIReceived intravenous antibiotic ± 5 days from index or received multiple oral antibiotics (at index)Complicating comorbidities (e.g., ESRD, malignancy with immunosuppression therapy) (baseline or index)HIV/AIDS (baseline or index)Functional or anatomical abnormalities of the urinary tract (baseline or index)Pregnancy (at baseline or index)Inpatient hospital admission 3 months prior or 2 days post index (indicating nosocomial UTI)
AIDS, acquired immunodeficiency syndrome; ESRD, end-stage renal disease; HIV, human immunodeficiency virus.	

- Patients were categorized as having evidence of treatment failure if they: received a second oral antibiotic prescription of interest; received intravenous antibiotics of interest; or had a second primary diagnosis of UTI in an acute care setting (emergency room or inpatient) within 28 days of index date
 - A uUTI episode was defined as a period of 28 days; in patients who experienced treatment failure, the length of the uUTI episode was extended from the date of treatment failure for an additional 28 days
- HCRU and costs were assessed for the index uUTI episode
- Satterthwaite approximation statistical testing was used to calculate p-values to account for two different sample variances

References

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Results

- 238,335 patients were included in this study; 12.3% had evidence of treatment failure (Table 2)
- Treatment failure was associated with significantly higher rates of uUTI-related HCRU across all categories (Figure 2A)
- uUTI-related outpatient costs were significantly higher for patients with treatment failure versus those without failure (Figure 2B)
- Of 29,333 patients with treatment failure, 45.3% were treated with nitrofurantoin (NTF) as first line Abx, followed by fluoroquinolones (FQ; 26.8%), sulfonamides (SXT; 24.1%), β-lactams (BL; 3.7%), and Fosfomycin (FO; 0.1%) (Figure 3)
- Treatment failure rates were highest for FO (21.5%), followed by BL (15.5%), SXT (14.4%), NTF (12.2%), and FQ (10.2%) (Figure 3)

Figure 2. Patients with evidence of treatment failure versus no treatment failure: (A) uUTI-related HRU: index episode, per patient (B) uUTI-related cost: index episode, per patient

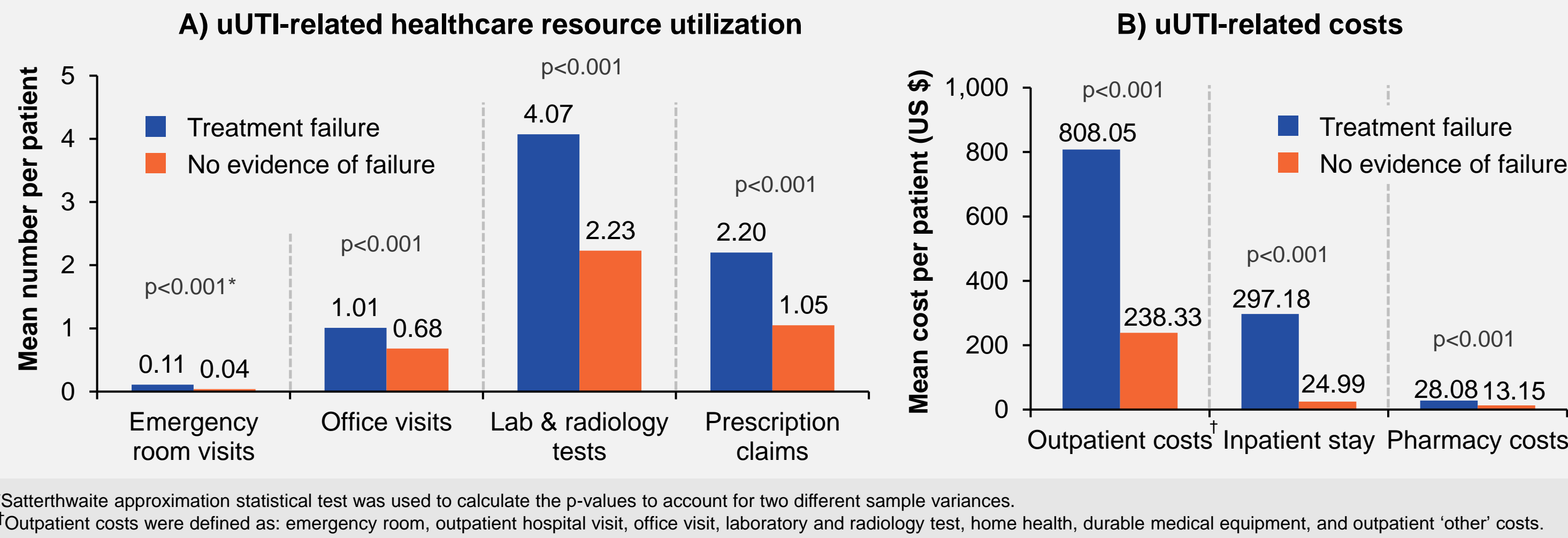
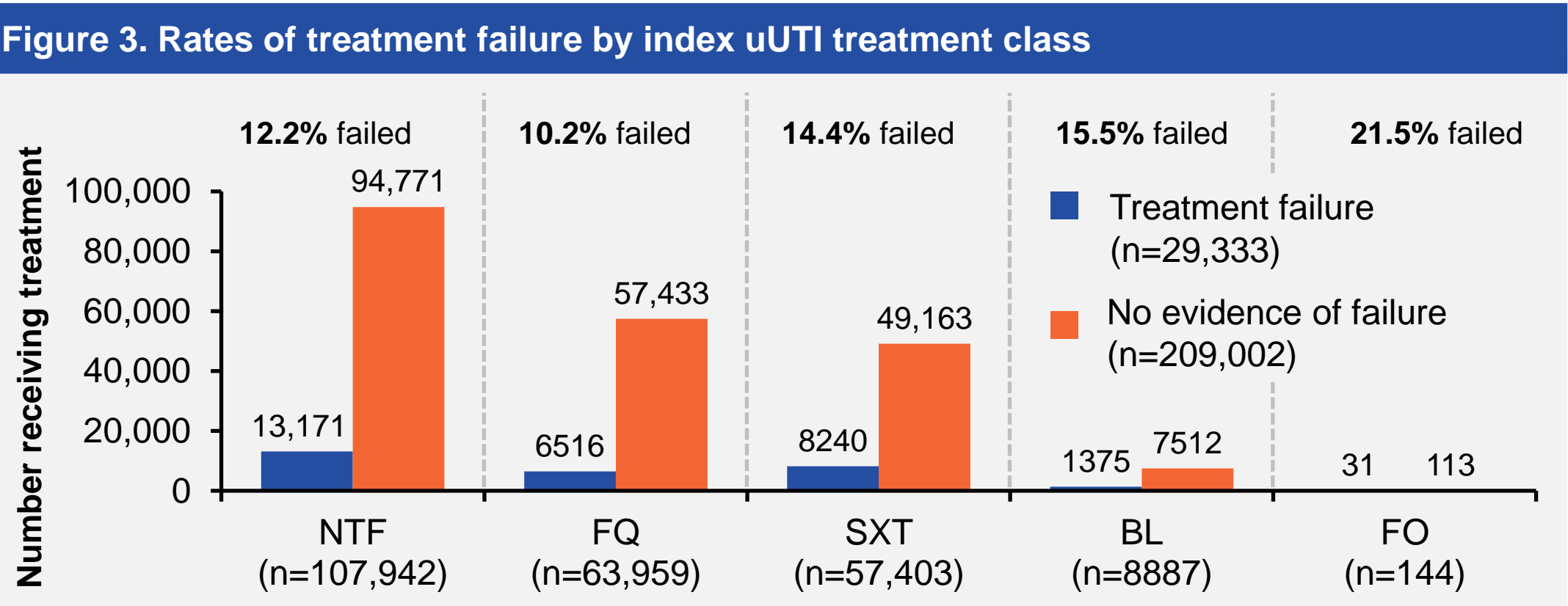


Table 2. Baseline patient demographics by subgroup			
	All uUTI patients	Evidence of treatment failure	No evidence of treatment failure
Number of patients, n (%)	238,335 (100.0)	29,333 (12.3)	209,002 (87.7)
Age, mean (SD)	54.0 (20.3)	56.5 (19.8)	53.6 (20.3)
CCI, mean (SD)	0.49 (1.05)	0.55 (1.09)	0.49 (1.04)
Proportion of outpatients, n (%)			
Emergency room visits	40,174 (16.9)	5347 (18.2)	34,827 (16.7)
Outpatient hospital visits	102,026 (42.8)	13,243 (45.2)	88,783 (42.5)
Office visits	221,824 (93.1)	27,632 (94.2)	194,192 (92.9)
Lab/imaging tests	211,864 (88.9)	26,614 (90.7)	185,250 (88.6)
Home health visits	9661 (4.05)	1437 (4.90)	8224 (3.93)
DME claims	7176 (3.01)	1044 (3.56)	6132 (2.93)
Other outpatient claims	86,882 (36.5)	11,414 (38.9)	75,468 (36.1)
CCI, Charlson Comorbidity Index; DME, durable medical equipment; SD, standard deviation.			



Conclusions

- Our results were consistent with the range of treatment failure in published literature,^{4,5} with ~12% of patients experiencing treatment failure of first-line antibiotic prescription in uUTI
- Treatment failure was associated with significantly higher HCRU and outpatient costs, demonstrating an increased burden of disease for patients with uUTI who experience treatment failure. Therefore, a greater understanding of the risk factors for treatment failure is needed to inform antibiotic prescribing for patients with uUTI

Disclosures

- This study was funded by GSK (study 218752). AVJ, FSM-G, and MTP are employees of, and hold shares in, GSK. MF, NS, ME and SK are employees of Precision HEOR, who received funding for this study from GSK.
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