

radiograph (P=0.031). These data suggest potentially consequential interruptions and delays in pulmonary TB diagnosis during the COVID-19 period.

Disclosures. Susan Bulter-Wu, PhD, Cepheid (Consultant)

194. Progression of an Uncomplicated Urinary Tract Infection Among Female Patients with Susceptible and Non-Susceptible Urine Isolates: Findings from an Integrated Delivery Network

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Session: O-39. UTIs

Background. Uncomplicated urinary tract infection (uUTI) is often treated empirically without antibiotic (AB) susceptibility testing; however, antimicrobial-resistant bacteria could lead to suboptimal treatment and progression to complicated UTI (cUTI). We examined the likelihood of uUTI progression to cUTI in patients with susceptible and non-susceptible uropathogens.

Methods. We performed a retrospective cohort study using data from a large Mid-Atlantic US integrated delivery network's electronic health records from July 1, 2016 to March 31, 2020. Patients included were female, aged ≥ 12 years with incident uUTI (diagnosis code or urine culture), and given an oral AB ± 5 days of diagnosis and ≥ 1 antibiotic susceptibility test. The primary outcome was progression to cUTI, defined as: new fever, nausea, or vomiting, in addition to uUTI symptoms; or receipt of intravenous antibiotic 3–28 days after index uUTI. Probability of progression to cUTI was assessed comparing patients with non-susceptible and susceptible isolates, with 1:1 propensity score matching. Patients retained for analysis had a nonzero predicted probability of being in the case and control group and were retained for analysis only if there were patients in the mirror group with similar propensity scores. Data were analyzed with logistic regression. Sensitivity analyses were performed to test the robustness of the primary analysis (Table).

Results. A total of 2565 patients were included: 1030 (40.2%) had non-susceptible isolates and 1535 (59.8%) had susceptible isolates. Mean age was 43.5 years and 59.5% of the cohort was White. After propensity score matching, patients with non-susceptible isolates were more than twice as likely to progress to cUTI versus patients with susceptible isolates (10.7% versus 4.9%; odds ratio, 2.35; p < 0.001; Figure). In sensitivity analyses, patients with non-susceptible isolates remained significantly more likely to progress to cUTI (p ≤ 0.009), excluding those receiving fluoroquinolones only (Table).

Figure. Probability of progression to cUTI

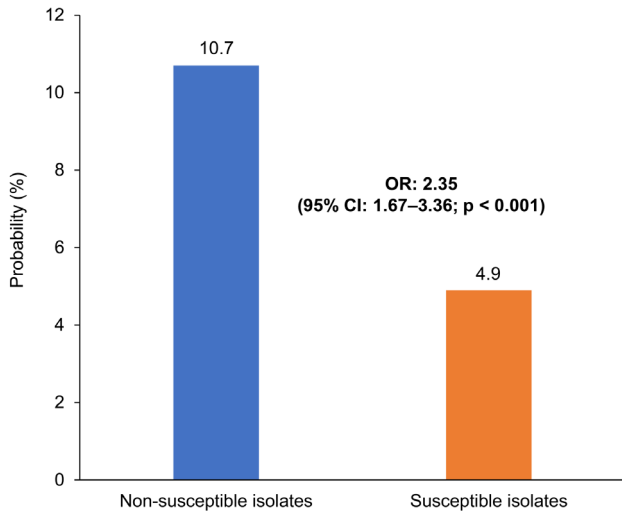


Table. Sensitivity analyses of the probability of uUTI progressing to cUTI in patients with non-susceptible versus susceptible isolates (matched population)

Sensitivity analysis	Probability of progressing to cUTI	
	Difference	p-value
Baseline (N=1009*)	0.060	< 0.001
Strict exclusion (n=661)†	0.039	0.009
Excluding other infections (n=995)‡	0.058	< 0.001
FQ-only (n=166)§	0.036	0.387

*Population size after matching; †including only patients with a documented uUTI diagnosis and positive urine culture; ‡including only patients with no other acute/semi-acute infections within 14 days of index uUTI; §including only patients initiating therapy with FQ; FQ was singled out because as of 12 May 2016 a black-box warning has been added to the label and outcomes with FQ are therefore of interest. Bold p values are statistically significant (p < 0.05).

cUTI, complicated urinary tract infection; FQ, fluoroquinolone; uUTI, uncomplicated urinary tract infection.

Conclusion. Patients with uUTI and AB-resistant isolates were significantly more likely to progress to cUTI than those with susceptible isolates. This finding highlights

the need for greater understanding of antimicrobial resistance and has implications for the clinical management of uUTI.

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195. Intravenous to Oral Antibiotics Versus Intravenous Antibiotics: A Step-Up or a Step-Down for Extended Spectrum Beta-Lactamase Producing Urinary Tract Infections?

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Background. The treatment of extended-spectrum beta-lactamase (ESBL)-producing urinary tract infections (UTI) may include either intravenous (IV) or oral (PO) antibiotics, according to the Infectious Diseases Society of America guidelines for resistant gram negative infections. The purpose of this study is to evaluate if PO step-down antibiotics, the switch group, compared to continued IV therapy in these UTIs affects clinical outcomes.

Methods. This multicenter retrospective cohort study was conducted in hospitalized patients with an ESBL-producing UTI between July 2016 and March 2020. The control group received a complete antibiotic course with a carbapenem. The switch group was transitioned to an oral agent within five days from initiation of a carbapenem. The primary endpoint was a composite all-cause clinical failure, which was defined as readmission or hospital mortality within 30 days of hospital discharge or a change in antibiotic during hospital admission. The secondary endpoints included individual components of the primary outcome, readmission indication, inpatient length of stay, direct antibiotic costs, and adverse events.

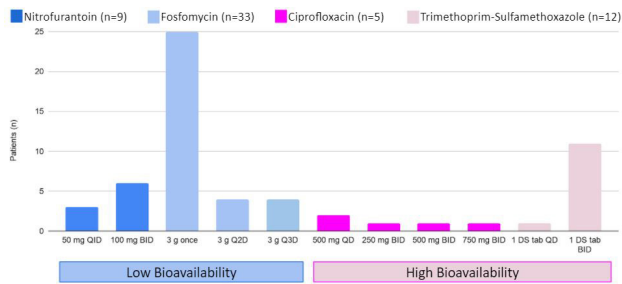
Results. The study included 153 patients: 95 and 58 patients in the control and switch groups, respectively. Demographics between the two groups were similar (Table 1). The mean ± SD duration of therapy was 8.7 ± 3.1 and 7.1 ± 3.3 days, respectively. Four oral agents were used for step-down therapy (Figure 1). The primary outcome occurred in 28% in both groups (27 vs 16 patients, p=0.91). The individual components of the primary outcome and readmission indication were also similar: readmission (93% vs 94%, p=0.95), readmission due to a recurrent UTI (33% vs 25%, p=0.73), hospital mortality (7% vs 6%, p=1.0), and change in antibiotic (0% vs 2%, p=0.38). The median (IQR) length of stay and direct antibiotic cost in the control and switch groups were 8 (6) vs 5 (2) days (p < 0.01) and \$278 (\$244) vs \$180 (\$104) (p < 0.01), respectively. Adverse events were similar in both groups except for diarrhea (15% vs 2%, p=0.01).

Table 1. Baseline Demographics. SD: standard deviation, ICU: intensive care unit, qSOFA: quick Sequential Organ Failure Assessment, ESBL: extended spectrum beta-lactamase, UTI: urinary tract infection

Demographic	Control (n=95)	Switch (n=58)
Age, years (mean ± SD)	68 ± 17	68 ± 19
Male, n (%)	28 (29.5)	20 (34.5)
Race, (%)		
Caucasian	52 (54.7)	36 (62.1)
Hispanic/Latino	24 (25.3)	12 (20.7)
African American	15 (15.8)	6 (10.3)
Other	4 (4.2)	4 (6.9)
Past Medical History, n (%)		
Diabetes	44 (46.3)	28 (48.3)
Chronic kidney disease	22 (23.2)	28 (48.3)
Cardiovascular	70 (73.7)	44 (75.9)
Pulmonary	16 (16.8)	4 (6.9)
Malignancy	17 (17.9)	6 (10.3)
Charlson Comorbidity Score (mean ± SD)	4.8 ± 2.7	4.5 ± 2.5
ICU admission, n (%)	26 (27.4)	5 (8.6)
qSOFA (mean ± SD)	1.0 ± 0.9	0.6 ± 0.7
History of ESBL-producing organism, n (%)	19 (20)	9 (15.5)
UTI classification		
Uncomplicated cystitis	9 (9.5)	7 (12.1)
Complicated cystitis	62 (65.3)	42 (74.2)
Immunocompromised	7 (7.4)	5 (8.6)
Kidney stones	4 (4.2)	4 (6.9)
Obstruction	7 (7.4)	4 (6.9)
Ureteral stents	4 (4.2)	4 (6.9)
Neurogenic bladder	2 (2.1)	3 (5.2)
Pyelonephritis	17 (18)	7 (12.1)
Catheter-related	7 (7.4)	2 (3.4)
Organism		
<i>E. coli</i>	74 (77.9)	46 (79.3)
<i>K. pneumoniae</i>	19 (20)	8 (13.8)
<i>K. oxytoca</i>	1 (1.1)	4 (6.9)
<i>P. mirabilis</i>	2 (2.1)	0 (0)

SD: standard deviation, ICU: intensive care unit, qSOFA: quick Sequential Organ Failure Assessment, ESBL: extended spectrum beta-lactamase, UTI: urinary tract infection

Figure 1. Oral Antibiotics. QD: once daily, BID: twice daily, Q2D: every 2 days, Q3D: every 3 days, DS tab: double strength tablet



Conclusion. There was no difference in clinical failure, readmission rate, mortality rate, or change in antibiotic between the control and switch groups; however, the switch group was associated with reduced hospital length of stay and direct antibiotic cost.

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196. Activity Impairment and Health-Related Quality of Life Associated with an Uncomplicated Urinary Tract Infection Among US Females

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Session: O-39. UTIs

Background. Uncomplicated urinary tract infections (uUTI) are among the most common infections in women; however, there are few data on the impact of uUTIs on daily activity and health-related quality of life (HRQoL).

Methods. This was a prospective, cross-sectional survey of US females aged ≥ 18 years with a self-reported uUTI in the 60 days prior to participation. Participants were included if they received oral antibiotic treatment and participated in surveys fielded by Dynata, Lucid/Federated, or Kantar Profiles. See **Table 1** for inclusion/exclusion criteria. Study objectives were to describe activity impairment (using the Activity Impairment Assessment [AIA]) and HRQoL (assessed with Short Form 36 version 2, Physical Component Score [PCS], Mental Component Score [MCS], and health utility index [SF-6D]) associated with uUTI. After screening, participants completed an online questionnaire on their most recent uUTI. Outcomes were reported with descriptive statistics, chi-squared tests, and t-tests. Analysis of HRQoL used 1:1 propensity score matching to compare to a matched US population from the 2020 National Health and Wellness Survey.

Table 1. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> Female Age 12 years or older* A resident of the United States Self-reported uUTI in the previous 60 days Treatment with an oral antibiotic for uUTI Ability to read English Provision of informed consent for the study 	<ul style="list-style-type: none"> Self-reported diagnosis for any of the following conditions indicative of cUTI in the 6-month period before oral antibiotic treatment for UTI: urologic abnormalities, ureteral abnormalities, interstitial cystitis, pyelonephritis, kidney stones, renal failure, congenital urological abnormalities, organ transplant, neurological disease Self-reported diabetes with an unknown or uncontrolled HbA1c level (defined as ≥ 7% by the American Diabetes Association 2011) Self-reported receipt of any immunosuppressive therapy at the time of developing a UTI Any UTI identified in the previous 60 days as having occurred during an inpatient hospitalization or stay at a long-term care facility Initial UTI-associated antibiotic treatment received during an inpatient hospitalization Pregnancy at the time of receiving UTI-associated oral antibiotic treatment Asymptomatic when diagnosed with a UTI (i.e. only diagnosed due to a positive urine culture with no other UTI symptoms present) Diagnosis of COVID in the past 12 months

*Despite this criterion, no participants were < 18 years of age.

cUTI, complicated urinary tract infection; HbA1c, glycated hemoglobin; UTI, urinary tract infection; uUTI, uncomplicated urinary tract infection.

Results. In total, 375 participants completed the questionnaire. Common impaired activities were: sexual intercourse (66.9%), sleep (60.8%), exercise (52.3%), housework (51.5%), and social activities (46.9%; **Table 2**). Overall mean AIA score was 11.1/20 (higher score = more impairment). Most participants (58.7%) had a PCS that was the same or better than the matched population, while for MCS, most participants (52.8%) had scores well below the matched population average. Overall PCS, MCS, and

SF-6D composite scores were 46.5, 40.0, and 0.63, respectively; these outcomes were significantly worse compared to the matched population, most notably MCS (**Table 3**). Stratification by number of antibiotics used revealed statistically significant differences in the effect of uUTI on exercise, PCS, SF-6D (based on use of 1 or ≥ 3 therapies), and on sleep (based on use of 2 or ≥ 3 therapies; **Table 4**).

Table 2. Activities impacted by uUTI

Activities impacted by uUTI (N=375)	n (%)
Sexual intercourse	251 (66.9)
Sleeping	228 (60.8)
Exercise	196 (52.3)
Housework/chores	193 (51.5)
Social activities	176 (46.9)
Shopping/running errands	145 (38.7)
Work outside the home	89 (23.7)
Studying	29 (7.7)
Childcare	24 (6.4)
Other	21 (5.6)

uUTI, uncomplicated urinary tract infection.

Table 3. Matched analysis of SF-36v2-measured HRQoL outcomes

Outcomes (unadjusted)	uUTI cohort N=375 Mean (SD)	Matched US population* N=375 Mean (SD)	Incremental burden of uUTI
PCS [‡]	46.5 (8.1)	51.2 (9.7)	-4.7 [†]
MCS [§]	40.0 (12.6)	46.9 (11.2)	-6.8 [†]
SF-6D [¶]	0.63 (0.12)	0.72 (0.14)	-0.1 [†]
Outcomes (adjusted)	Mean (SD)	Mean (SD)	Incremental burden of uUTI
PCS [‡]	46.4 (0.4)	51.3 (0.4)	-4.9 [†]
MCS [§]	40.0 (0.5)	46.9 (0.5)	-6.9 [†]
SF-6D [¶]	0.63 (0.01)	0.72 (0.01)	-0.1 [†]

*Derived from the NHWS 2020; [†]statistically significant difference (p < 0.0001); [‡]PCS score displayed worse functioning compared to other acute infections (e.g. acute nasopharyngitis [PCS=48.2] and acute tracheitis [PCS=48.4]); [§]MCS score at or below the same impact of both acute and chronic (e.g. acute nasopharyngitis [MCS=41.6], acute tracheitis [MCS=41.4] and osteoarthritis [MCS=41.7]); [¶]a score reduction of 0.37 is above the MCID threshold for SF-6D (mean 0.041).

HRQoL, health-related quality of life; MCID, minimal clinically important difference; MCS, mental component score; NHWS, national health and wellness survey; PCS, physical component score; SD, standard deviation; SF-6D, health utility index; SF-36v2, short form 36 version 2; uUTI, uncomplicated urinary tract infection.

Table 4. Outcomes stratified by number of oral antibiotics used to treat last uUTI

Activities impacted by uUTI, n (%)	1 AB (n=235)	2 AB (n=88)	≥ 3 AB (n=52)	1 vs 2 (p-value)	1 vs ≥ 3 (p-value)	2 vs ≥ 3 (p-value)
Sexual intercourse	157 (66.8)	59 (67.0)	35 (67.3)	0.968	0.945	0.975
Sleeping	147 (62.6)	45 (51.1)	36 (69.2)	0.063	0.365	0.036*
Exercise	118 (50.2)	44 (50.0)	34 (65.4)	0.973	0.047*	0.077
Housework/chores	116 (49.4)	50 (56.8)	27 (51.9)	0.233	0.738	0.574
Social activities	106 (45.1)	45 (51.1)	25 (48.1)	0.334	0.697	0.727
Shopping/running errands	86 (36.6)	39 (44.3)	20 (38.5)	0.205	0.801	0.498
Work outside the home	51 (21.7)	26 (29.5)	12 (23.1)	0.141	0.828	0.406
Studying	15 (6.4)	7 (8.0)	7 (13.5)	0.618	0.083	0.294
Childcare	13 (5.5)	6 (6.8)	5 (9.6)	0.662	0.338	0.537
Other	13 (5.5)	5 (5.7)	3 (5.8)	1.000	1.000	1.000
PCS vs matched population, n (%)						
Well below	48 (20.4)	21 (23.9)	19 (36.5)	0.548	0.030*	0.102
Below	43 (18.3)	19 (21.6)	5 (9.6)	–	–	–
Same or better	144 (61.3)	48 (54.5)	28 (53.8)	–	–	–
MCS vs matched population, n (%)						
Well below	115 (48.9)	51 (58.0)	32 (61.5)	0.353	0.104	0.436
Below	29 (12.3)	9 (10.2)	8 (15.4)	–	–	–
Same or better	91 (38.7)	28 (31.8)	12 (23.1)	–	–	–
HRQoL (SF-36v2), mean (SD)						
PCS	47.3 (7.8)	45.5 (8.1)	44.6 (9.0)	0.069	0.028*	0.540
MCS	40.6 (12.9)	39.4 (12.6)	38.4 (11.1)	0.475	0.253	0.615
SF-6D	0.65 (0.12)	0.62 (0.12)	0.60 (0.10)	0.147	0.006*	0.297
AIA score, mean (SD)	11.3 (5.7)	11.2 (6.0)	10.3 (5.3)	0.908	0.234	0.355

*Statistically significant difference (p < 0.05).

AB, antibiotic; AIA, activity impairment assessment; HRQoL, health-related quality of life; MCS, mental component score; PCS, physical component score; SD, standard deviation; SF-36v2, short form 36 version 2; SF-6D, health utility index; uUTI, uncomplicated urinary tract infection.

Conclusion. uUTIs are significantly associated with adverse patient outcomes for daily activities and HRQoL, compounded by suboptimal treatment evident by the use of multiple antibiotics. MCS was notably affected, which is important as this is not often studied in uUTI.

Disclosures. Jeffrey Thompson, PhD, Kantar Health (Employee, Employee of Kantar Health, which received funding from GlaxoSmithKline plc. to conduct this study) Alen Marijam, MSc, GlaxoSmithKline plc. (Employee, Shareholder) Fanny S. Mitrani-Gold, MPH, GlaxoSmithKline plc. (Employee, Shareholder) Jonathon Wright, BSc, Kantar Health (Employee, Employee of Kantar Health, which received funding from GlaxoSmithKline plc. to conduct this study) Ashish V. Joshi, PhD, GlaxoSmithKline plc. (Employee, Shareholder)