Table 1. Cohort assignment for high-risk cohorts and controls

| High-risk condition | Case definition | Control definition |
|---|---|---|
| T2D | Patients with uUTI and a diagnosis of controlled T2D (uncomplicated) in the baseline period | Patients with uUTI and without diagnosis of T2D (controlled or uncontrolled) at any time during the study period |
| CKD | Patients with uUTI and a diagnosis of mild/moderate CKD in the baseline period | Patients with uUTI and without diagnosis of CKD, ESRD, or dialysis at any time during the study period |
| rUTI | Patients with ≥ 2 uUTI diagnoses (3 total including index uUTI diagnosis) during 6 months prior to index date, or ≥ 2 (3 total including index episode) in 12 months prior to index date | Patients with uUTI and with no UTI episodes prior to the index date |
| ELD | Patients with uUTI ≥ 65 years of age on index date | Patients with uUTI 12 to < 65 years of age on index date |
| PMP | Patients with uUTI ≥ 50 years of age on index date | Patients with uUTI 12 to < 50 years of age on index date |

High-risk cohorts were not mutually exclusive (patients could be included in > 1 cohort).

CKD, chronic kidney disease; ELD, elderly; PMP, postmenopausal; rUTI, recurrent urinary tract infection; T2D, type 2 diabetes; uUTI, uncomplicated urinary tract infection.

***Results.*** Of 339,100 patients with uUTI, case/control cohorts comprised T2D, n=15,423/n=77,115; CKD, n=1041/n=5205; rUTI, n=7937/n=39,685; ELD, n=23,666/n=118,330; and PMP, n=105,608/n=211,216 patients. HRU trends across cohorts varied. During 1-year followup, outpatient visits were significantly different for cases versus controls in the T2D, rUTI, and PMP cohorts ($p \leq 0.0079$), with higher case than control values in the rUTI and PMP cohorts; pharmacy claims were significantly higher for rUTI, ELD, and PMP cases, and inpatient visits were significantly higher for ELD and PMP cases, versus controls (all $p < 0.0001$; Table 2). Adjusted total uUTI-related costs (emergency room + outpatient + pharmacy) were significantly different ($p < 0.0001$) for cases versus controls at index episode and during follow-up in all cohorts except CKD: case values were higher than controls at index episode and during follow-up in the T2D cohort, and during follow-up in the rUTI and ELD cohorts (Table 3).

Table 2. uUTI-related HRU* for cases versus controls according to high-risk cohort

| HRU | T2D Case n=15,423 | T2D Control n=77,115 | T2D p-value | CKD Case n=1041 | CKD Control n=5025 | CKD p-value | rUTI Case n=7937 | rUTI Control n=39,685 | rUTI p-value | ELD Case n=23,666 | ELD Control n=118,330 | ELD p-value | PMP Case n=105,608 | PMP Control n=211,216 | PMP p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| During index uUTI episode | | | | | | | | | | | | | | | |
| ER visits | 0.10 | 0.09 | 0.0001† | 0.10 | 0.10 | ns | 0.07 | 0.11 | < 0.0001† | 0.12 | 0.11 | ns | 0.09 | 0.13 | < 0.0001 |
| OP visits | 1.02 | 1.04 | 0.0267† | 1.02 | 1.02 | ns | 1.12 | 1.02 | < 0.0001† | 0.97 | 1.04 | < 0.0001† | 1.04 | 1.02 | < 0.0001 |
| Pharmacy claims | 1.13 | 1.15 | 0.0316† | 1.12 | 1.16 | ns | 1.19 | 1.13 | < 0.0001† | 1.16 | 1.13 | 0.0002† | 1.14 | 1.12 | < 0.0001 |
| During 1-year follow-up period | | | | | | | | | | | | | | | |
| IP visits | 0.00 | 0.00 | ns | 0.00 | 0.01 | ns | 0.00 | 0.00 | ns | 0.01 | 0.00 | < 0.0001† | 0.00 | 0.00 | < 0.0001 |
| ER visits | 0.12 | 0.11 | 0.0004† | 0.12 | 0.12 | ns | 0.12 | 0.14 | < 0.0001† | 0.14 | 0.14 | ns | 0.11 | 0.15 | < 0.0001 |
| OP visits | 1.34 | 1.37 | 0.0079† | 1.35 | 1.42 | ns | 1.96 | 1.33 | < 0.0001† | 1.35 | 1.34 | ns | 1.36 | 1.31 | < 0.0001 |
| Pharmacy claims | 1.42 | 1.44 | 0.0192† | 1.41 | 1.50 | 0.0213† | 1.94 | 1.40 | < 0.0001† | 1.50 | 1.40 | < 0.0001† | 1.42 | 1.38 | < 0.0001 |

Multivariate analysis was performed via generalized linear modeling. All models were adjusted by cohort, baseline Charlson Comorbidity Index score, and baseline all-cause HRU (inpatient, ER, outpatient, pharmacy). High-risk cohorts were not mutually exclusive (patients could be included in > 1 cohort).

*HRU outcomes examined included all-cause and uUTI-related office visits, hospitalizations, prescriptions, and ER visits; †Statistically significant difference ($p < 0.05$).

CKD, chronic kidney disease; ELD, elderly; ER, emergency room; HRU, healthcare resource use; IP, inpatient; ns, not significant; OP, outpatient; PMP, postmenopausal; rUTI, recurrent urinary tract infection; T2D, type 2 diabetes; UTI, urinary tract infection; uUTI, uncomplicated urinary tract infection.

Table 3. uUTI-related costs* for cases versus controls according to high-risk cohort

| Costs, $ | T2D Case n=15,423 | T2D Control n=77,115 | T2D p-value | CKD Case n=1041 | CKD Control n=5025 | CKD p-value | rUTI Case n=7937 | rUTI Control n=39,685 | rUTI p-value | ELD Case n=23,666 | ELD Control n=118,330 | ELD p-value | PMP Case n=105,608 | PMP Control n=211,216 | PMP p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| During index UTI episode | | | | | | | | | | | | | | | |
| ER | 91 | 71 | < 0.0001‡ | 118 | 102 | ns | 46 | 83 | < 0.0001‡ | 132 | 77 | < 0.0001‡ | 71 | 89 | < 0.0001‡ |
| OP | 153 | 149 | 0.0113† | 191 | 169 | 0.0048† | 142 | 159 | < 0.0001‡ | 183 | 153 | < 0.0001‡ | 150 | 159 | < 0.0001‡ |
| Pharmacy | 12 | 13 | < 0.0001‡ | 11 | 14 | < 0.0001‡ | 18 | 13 | < 0.0001‡ | 14 | 13 | < 0.0001‡ | 13 | 13 | < 0.0001‡ |
| Total† (≤ 99th percentile by cohort) | 177 | 164 | < 0.0001‡ | 195 | 185 | ns | 159 | 183 | < 0.0001‡ | 205 | 282 | < 0.0001‡ | 166 | 193 | < 0.0001‡ |
| During 1-year follow-up period | | | | | | | | | | | | | | | |
| ER | 110 | 83 | < 0.0001‡ | 162 | 123 | ns | 166 | 91 | < 0.0001‡ | 166 | 91 | < 0.0001‡ | 85 | 104 | < 0.0001‡ |
| OP | 193 | 194 | ns | 223 | 235 | ns | 253 | 200 | < 0.0001‡ | 249 | 192 | < 0.0001‡ | 192 | 197 | < 0.0001‡ |
| Pharmacy | 16 | 17 | < 0.0001‡ | 15 | 19 | < 0.0001 | 29 | 16 | < 0.0001‡ | 18 | 16 | < 0.0001‡ | 16 | 16 | ns |
| Total† (≤ 99th percentile by cohort) | 232 | 215 | < 0.0001‡ | 270 | 269 | ns | 287 | 236 | < 0.0001‡ | 307 | 230 | < 0.0001‡ | 217 | 243 | < 0.0001‡ |

Multivariate analysis was performed via generalized linear modeling. All models were adjusted by cohort, baseline Charlson Comorbidity Index score, and baseline all-cause HRU (inpatient, ER, outpatient, pharmacy). High-risk cohorts were not mutually exclusive (patients could be included in > 1 cohort).

*Costs included direct costs associated with all-cause and uUTI-related office visits, hospitalizations, prescriptions, and ER visits, and indirect costs such as workplace absenteeism, short-term disability days, and total productivity loss; †Includes IP, emergency room, OP, and pharmacy costs; ‡Statistically significant difference ($p < 0.05$).

CKD, chronic kidney disease; ELD, elderly; ER, emergency room; HRU, healthcare resource use; IP, inpatient; ns, not significant; OP, outpatient; PMP, postmenopausal; rUTI, recurrent urinary tract infection; T2D, type 2 diabetes; UTI, urinary tract infection; uUTI, uncomplicated urinary tract infection.

***Conclusion.*** Females in some high-risk case cohorts had higher uUTI-related HRU and costs versus controls. Further studies of relationships between comorbidities and uUTI burden are needed.

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### 1430. Descriptive Epidemiology of Emergency Department Visits with cUTI in the US, 2012-2018

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**Session:** P-81. UTIs

***Background.*** Urinary tract infections (UTI) represent a substantial burden to the healthcare system. In the early 2000s annual UTI admissions numbered 100,000, and these infections resulted in over 1 million emergency department (ED) visits. While only a fraction of total UTI volume, the estimated cost of complicated (cUTI) to the healthcare system exceeded $3.5 billion. We set out to evaluate the contemporary burden of cUTI in the US in terms of ED visits annually.

***Methods.*** We conducted a retrospective multicenter cohort study within the National Emergency Department (NEDS) database, a 20-percent stratified sample of all US hospital-based EDs, from 2012-2018, to explore characteristics of patients discharged with a cUTI diagnosis. We applied a previously published algorithm to identify cUTI using administrative coding. We applied survey methods to develop national estimates.

***Results.*** Among 3,010,997 ED visits with cUTI, 43.3% were female, and 59.0% were age 65 years or older. Commensurately, Medicare was the primary payor in 62.8% of the visits. The majority of the patients (59.1%) presented to metropolitan teaching hospitals, and plurality were in the Southern US (39.6%). There was a narrow range in the visits' seasonal variation, from 6.4% occurring in February to 7.9% in October. cUTI was the principal diagnosis in 48.5% of all cUTI visits. In the remaining 51.5%, sepsis was the most common principal diagnosis (33.9%), but severe sepsis and septic shock codes each appeared in 4.9%. Of all cUTI ED visits, 21.4% had catheter-associated UTI. While only 19.8% had a code for pyelonephritis, 2,050,548 (68.1%) were admitted to the hospital. Mortality in the ED was 0.02%.

***Conclusion.*** During the seven-year span, there were over 3 million ED visits for cUTI. Although fewer than 1 in 10 patients met criteria for severe sepsis/septic shock, approximately 2/3rds of cUTI patients presenting to the ED were subsequently hospitalized.

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### 1431. Evaluating Physician Decision Making in Inpatient Antibiotic Prescription for Suspected Urinary Tract Infection

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**Session:** P-81. UTIs

***Background.*** Physicians are constantly asked to evaluate inpatients for possible antibiotic treatment. As part of antibiotic stewardship it is imperative to understand the decision-making process behind a physician's choice to prescribe antibiotics appropriately in an inpatient setting. Fuzzy Trace Theory (FTT) suggests that physicians use one of two methods in medical decision making; verbatim, employing a comprehensive risk benefit analysis, and gist, considering a bottom line analysis.

***Methods.*** Seventy-six hospitalists at Weill Cornell Medicine in Manhattan, New York received a survey with two reminders to evaluate their decision-making process. Five basic demographic questions regarding participant gender, race, background, age, and years in practice were asked. A clinical vignette describing an inpatient with a possible urinary tract infection (UTI) was followed with statements framing hypothetical antibiotic prescription. A seven point Likert scale with response choices from Strongly Disagree scored as one to Strongly Agree scored as seven was used to assess degree of participant agreement with each statement. Questions were presented in a random order to eliminate possible effects of questions clusters or question order.

***Results.*** Twenty-six hospitalists completed the survey. Consistent with previous literature, the hospitalists surveyed displayed a gist interpretation of the risks and benefits of antibiotics, with a mean Likert scale score of 5.54 agreeing that there are benefits to antibiotic prescription, and a mean Likert scale score of 6.04, agreeing that there are risks to antibiotic prescription. . However, the clinicians surveyed ultimately found antibiotics to be a necessary risk given the possible benefit of improving patient health. The hospitalists surveyed also did not view antibiotic prescription to be a product of pressure from patient families, agreeing by a mean Likert scale score of 5.08 that the patient's family will trust their physician to prescribe antibiotics if needed.

***Conclusion.*** These findings suggest that physician education to reduce overprescribing of antibiotics should underscore possible antibiotic risk, despite potential benefit.

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### 1432. Patient-Reported Urinary Tract Infection Symptoms Among Veterans with Neurogenic Bladder

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