Descriptive epidemiology of UTI hospitalizations in the US, 2018

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Introduction

- Antimicrobial resistance has been on the rise in the US and worldwide.
- In parallel, urinary tract infection (UTI) hospitalizations have been increasing as well.
- In the first decade of this century, UTI hospitalizations quadrupled.[1,2]
- Most attention has been paid to UTI in the setting of an indwelling catheter (CAUTI).
- Less is known about the full current extent of hospitalizations with any UTI.

Study Aim

To evaluate the contemporary burden of annual hospitalizations with UTI in the US

Methods

- Study design: cross-sectional
- Data source: AHRQ's National Inpatient Sample (NIS), 20% stratified sample of all US acute care hospitalizations, 2018
- Identified UTI using a modified ICD-10 algorithm [3]
- Derived national estimates using survey methods
- Divided UTI into 3 mutually exclusive groups: catheter-associated (CAUTI), non-CA complicated (nCAcUTI), and uncomplicated (uUTI)

Results

Table 1. Characteristics and outcomes

	nCAcUTI	uUTI	CAUTI
Total (%)	**500,400 (17.6)**	**2,210,950 (77.9)**	**126,115 (4.4)**
Female gender (%)	187,920 (37.6)	1,666,335 (75.4)	42,390 (33.6)
Race (%)			
White	344,295 (68.8)	1,520,620 (68.8)	89,445 (70.9)
African-American	60,280 (12.1)	301,260 (13.6)	17,725 (14.1)
Hispanic	54,875 (11.0)	222,610 (10.1)	10,255 (8.1)
Asian/Pacific Islander	13,595 (2.7)	46,165 (2.1)	2,445 (1.9)
Other	27,355 (5.5)	120,295 (5.4)	6,250 (5.0)
Mean age, years (SD)	69.7 (17.2)	69.0 (18.5)	70.7 (16.0)
Mean Charlson (SD)	4.27 (2.21)	4.38 (2.24)	4.55 (2.11)
Large hospitals (%)	248,825 (48.7)	1,030,026 (46.6)	61,365 (48.7)
Urban teaching (%)	347,700 (69.5)	1,414,779 (64.0)	85,130 (67.5)
ED admission (%)	405,090 (81.0)	1,815,906 (82.1)	110,645 (87.7)
Mean UTI caseload, % (SD)*	1.6 (1.0)	8.1 (4.7)	0.5 (0.4)
UTI secondary dx (%)	401,190 (80.2)	1,908,865 (86.3)	45,690 (36.2)
Sepsis principal dx (%)	89,440 (17.9)	338,165 (15.3)	8,145 (6.5)
Hospital mortality (%)	13,905 (2..8)	85,495 (3.9)	4,330 (3.4)

CAUTI = catheter-associated UTI; nCAcUTI = non-CA complicated urinary tract infection; uUTI = uncomplicated UTI; ED = emergency department; SD = standard deviation; dx = diagnosis. *Defined as the number of UTI discharges as a percentage of all hospital discharges

Figure 1. Regional distributions of UTI types

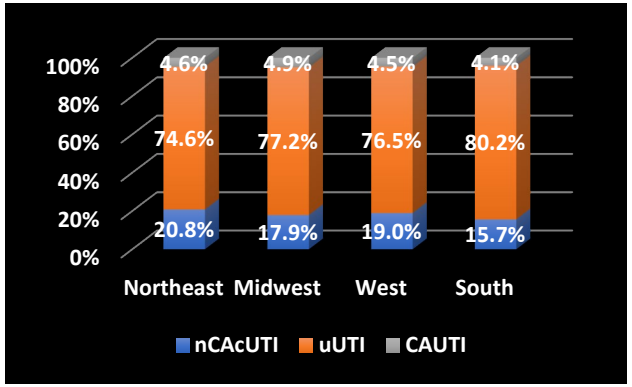
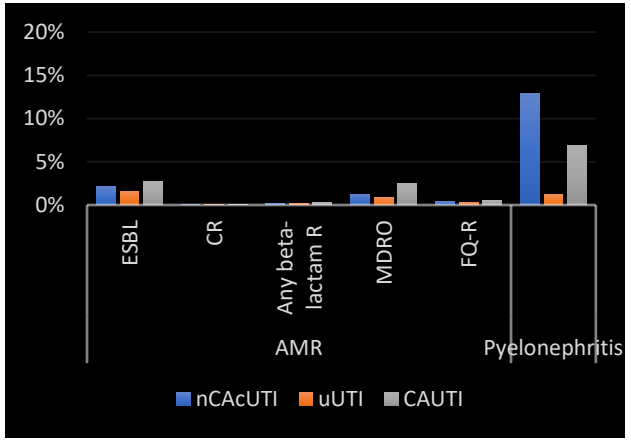


Figure 2. Prevalence of AMR and of pyelonephritis



AMR = antimicrobial resistance; CAUTI = catheter-associated UTI nCAcUTI = non-CA complicated urinary tract infection; uUTI = uncomplicated UTI; ESBL = extended spectrum beta-lactamase; CR = carbapenem R; MDR = multidrug R; FQ-R = fluoroquinolone R

Main Findings

- There are >2.8 million UTI hospitalizations in the US annually
- ~1/4 are complicated UTI, of which <1/4 are CAUTI
- In contrast to CAUTI, where in 2/3 it is the reason for admission, UTI is the reason in <20% of uUTI and nCAcUTI
- Sepsis is a reason for admission in <18% across all UTI types

Strengths & Limitations

- Misclassification due to administrative algorithm
- Not including AMR in cUTI definition, may have caused some misclassification
- Since hospitalization is the unit of analysis, cannot differentiate between first and repeat
- Data highly generalizable

Conclusions

- UTI admissions represent ~8% of all annual US hospitalizations
- Vast majority are uncomplicated
- nCAcUTI is 4x more common that CAUTI
- Sepsis is an uncommon principal cause of admission, and least so in CAUTI

[1]Foxman B. Am J Med 2002;113:5S–13S
[2]Simmering JE et al. Open Forum Infect Dis 2017;4:ofw281
[3]Zilberberg MD et al. Antimicrob Agents Chemother 2020;64:e00346-20

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