

Healthcare resource utilization during hospitalizations with UTI in the US, 2018

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Introduction

- UTI as the reason for hospitalization costs the US healthcare system nearly \$3 billion¹
- This estimate, however, excludes UTIs that are not the principal admission diagnoses.
- Thus the full extent of hospital resource utilization associated with UTI in the US is unknown.

Study Aim

To evaluate the full contemporary annual hospital resource utilization among patients 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 algorithm²
- 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)
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)
Median [IQR] LOS, days	4 [3, 8]	4 [3, 8]	5 [3, 9]
Mean reimbursement (SD) for top 5 DRGs*			
DRG Rank #1 (%)	#871 (14.2)	#871 (13.2)	#698 (44.7)
Cost, \$	16,067 (14,681)	14,725 (13,768)	11,653 (11,504)
DRG Rank #2 (%)	#690 (10.7)	#690 (8.6)	#699 (13.1)
Cost, \$	6,897 (6,451)	\$6,226 (4,292)	7,551 (6,903)
DRG Rank #3 (%)	#872 (10.2)	#872 (5.8)	#871 (8.5)
Cost, \$	8,478 (6,115)	7,909 (5,494)	17,677 (15,326)
DRG Rank #4 (%)	#689 (4.2)	#689 (5.2)	#700 (2.0)
Cost, \$	9,791 (9,066)	8,172 (7,179)	5,448 (2,893)
DRG Rank #5 (%)	#683 (3.2)	#291 (2.5)	#853 (1.6)
Cost, \$	8,385 (7,593)	13,824 (13,899)	49,960 (67,775)

CAUTI = catheter-associated UTI; nCAcUTI = non-CA complicated urinary tract infection; uUTI = uncomplicated UTI

*#871=Septicemia or severe sepsis without MV >96 hours with MCC; #690=Kidney and urinary tract infections without MCC; #872= Septicemia or severe sepsis without MV >96 hours without MCC; #689= Kidney and urinary tract infections with MCC; #683=Renal failure with CC; #291=Heart failure and shock with MCC; #698=Other kidney and urinary tract diagnoses with MCC; #699=Other kidney and urinary tract diagnoses with CC; 700= Other kidney and urinary tract diagnoses without CC/MCC; #853 = Infectious and parasitic diseases with OR procedure with MCC

Figure 1. Top 3 principal diagnoses

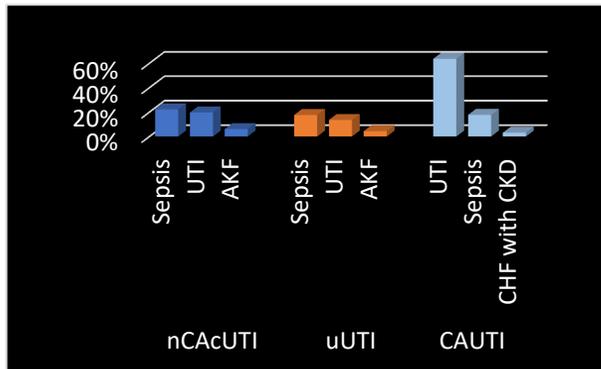
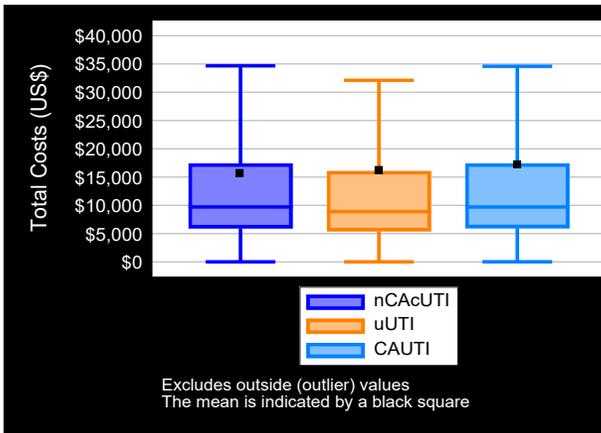


Figure 2. Costs of UTI hospitalizations



CAUTI = catheter-associated UTI nCAcUTI = non-CA complicated urinary tract infection; uUTI = uncomplicated UTI; AKF = acute kidney failure; CHF = congestive heart failure; CKD = chronic kidney disease

Main Findings

- There are >2.8 million UTI hospitalizations in the US annually
- Only 17% carry UTI as the principal diagnosis
- Mean per case cost of a UTI hospitalization is between \$15,500 and \$17,500, depending on the UTI type (weighted mean ~\$16,000)
- Though rare, the most expensive DRG occurs most frequently in 1.6% CAUTI at a cost of ~\$50,000

Strengths & Limitations

- Misclassification due to administrative algorithm
- 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
- At \$16K/case, the costs add up to nearly \$46 billion in annual aggregate UTI hospital bill in the US
- Though garnering less attention than CAUTI, nCAcUTI and uUTI consume ~20x more resources

¹Simmering JE et al. Open Forum Infect Dis 2017;4:ofw281

²Zilberberg MD et al. Antimicrob Agents Chemother 2020;64:e00346-20