

Utilizing a Data-Driven Approach to Develop Nurse-Driven Indwelling Urinary Catheter Removal and Urinary Retention Management Protocols

Uthpala Rajapakse, BSN RN CIC; Jenna Calder, MSN RN CIC ONC; Alexandra P. Grizas, MPH CIC

HSS | Hospital for Special Surgery, New York, NY | Infection Prevention Department

INTRODUCTION

Indwelling urinary catheterization (IUC) duration closely correlates with catheter-associated urinary tract infection (CAUTI). While literature supports nurse-driven removal protocols to reduce IUC utilization and CAUTIs, limited information exists on tailoring protocols to specific populations. Currently we maintain IUCs throughout admission and at discharge for inpatients who fail trial of void (TOV) after 24-hours of in/out straight catheterization.

PURPOSE

Develop nurse-driven IUC removal and acute urinary retention (AUR) management protocols based on best practices and institutional IUC and CAUTI data.

METHODS

Following literature review and discussing AUR with Urology consultants from an outside facility, we conducted a retrospective analysis of inpatient IUC utilization and CAUTI from 1/2019 - 6/2023 at our orthopedic surgery hospital. Sex, race, IUC duration, multiple IUC during admission, and CAUTI were evaluated following National Healthcare Safety Network definitions. Odds ratio (OR) (p-value cutoff = 0.05) was calculated comparing CAUTI among longer versus shorter IUC duration.

REFERENCES

Patel, P. K., Advani, S. D., Kofman, A. D., Lo, E., Maragakis, L. L., Pegues, D. A., Pettis, A. M., Saint, S., Trautner, B., Yokoe, D. S., & Meddings, J. (2023). Strategies to prevent catheter-associated urinary tract infections in acute-care hospitals: 2022 update. *Infection Control Hospital Epidemiology*, 44(8), 1209–1231. <https://doi.org/10.1017/ice.2023.137>
 Toolkit for reducing catheter-associated urinary tract infections in hospital units: Implementation Guide. AHRQ. (2015). <https://www.ahrq.gov/hai/cauti-tools/impl-guide/index.html>

RESULTS

25,275 inpatient IUCs were identified during the study period. 52.1% were among females and utilization by race aligned with our inpatient population demographics. Most inpatients (96.5%) had only 1 IUC during admission. 2,238 IUCs (8.9%) were CAUTI-surveillance eligible and 18 CAUTIs were identified during the study period. 8 CAUTIs (4.3%) occurred in 8+-day IUCs; 2 (3.0%) in 7-day IUCs; 2 (1.8%) in 6-day IUCs; 2 (1.0%) in 5-day IUCs; and 4 (0.96%) in 4-day IUCs. CAUTI was 10.6 times more likely to occur in 6+-day IUCs (p <0.0001, 95% CI=3.95 - 28.47) than 3-5-day IUCs (see Table 1). Urology recommended 5-7 days of bladder rest for AUR.

TABLE 1: HSS IUC DATA

Variables	# CAUTI (%)	Total # IUC's	CAUTI Rate
Total	18 (0.80%)	2,238	
IUC Duration (days)			
≥8	8 (4.26%)	188	3.3% (12/364) x100
7	2 (3.03%)	66	
6	2 (1.82%)	110	
5	2 (1.00%)	200	0.32% (6/1874) x100
4	4 (0.96%)	415	
3	0 (0%)	1,259	

CONCLUSIONS

Aligning with Urology recommendations and our finding a 10.6-fold increased CAUTI risk among 6+-day IUCs, we updated our AUR protocol to include removal at 5 days to reassess void status (see Figure 1). We will monitor CAUTI and repeat TOV failures. Our findings also highlight opportunities for increased diligence with timely IUC removal and evaluating root causes underlying increased CAUTI risk at our institution beyond IUC utilization alone.

FIGURE 1: AUR PROTOCOL

