

# A Quality Improvement Initiative to Reduce Catheter-Associated Urinary Tract Infections by Decreasing Unnecessary Foley Catheter Use in Hospitalized Patients

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Dear editor,

Catheter-associated urinary tract infections (CAUTIs) represent 80% of urinary infections in a hospital setting [1]. CAUTIs are not only the most common hospital associated infections, but also are the most avoidable, with up to 69% of the cases being preventable [2]. Approximately nine thousands of deaths each year may be attributable to CAUTIs [2]. The cost to the hospital and Medicare in an inpatient setting for CAUTI management is about \$876 and \$1,764 per patient, respectively [3].

The two main strategies that have been shown to reduce CAUTIs include avoiding unnecessary catheter placements and shortening the duration of catheterization [4]. In recognizing the importance of reducing unnecessary urinary (Foley) catheter placements, we conducted a quality improvement initiative that consisted of modifying access to urinary (Foley) catheter placement kits by removing the kits from medical-surgical units. Instead of having the kits accessible in the utility room of each unit, they had to be ordered from the hospital's centralized Materials Distribution Center when the appropriate indication was met, as judged by the ordering provider. In order to evaluate effectiveness of this intervention, we retrospectively determined the necessity of catheter placement for each order, using the criteria outlined in the hospital's policy on the prevention of

CAUTIs, which is in accordance with recommendations by the Centers for Disease Control [2]. Urinary catheter placement was considered necessary if a patient had one or more of the following characteristics: 1) urinary retention with post-void residual >350 mL (as per a bladder scan); 2) strict prolonged immobilization; 3) stage III/VI skin breakdown; 4) end-of-life (palliative) care; 5) strict or hourly output monitoring in a patient with impaired sensorium; or 6) a perioperative patient. The pre-intervention and post-intervention rates of unnecessary catheter placement were compared.

We found no significant differences in the age and sex distribution in the patients who underwent Foley catheter placement pre- vs. post-intervention (**Table 1**). The proportion of orders that did not meet the criteria for necessity was 36% and 11%, respectively (Chi-Square,  $p=0.0002$ ). Frequency distribution for indications among necessary catheter placements is displayed in **Table 1**. The CAUTI rate (per patient days) over a 3-month period post-intervention decreased by 24% compared to the similar period pre-intervention.

Initiatives aimed at preventing CAUTIs, including adding a stop order, reminders, and hygiene protocols, have been proven to be effective [4]. Most successful preventative initiatives implemented safety bundles that included an educational component or a training session, which were both time-consuming and required funding [5,6]. We studied

<b>Table 1.</b> Patient characteristics and Frequency distribution for indications among necessary catheter placements.			
<b>Patient characteristic</b>	<b>Intervention</b>		<b>P</b>
	<b>Pre-n=80</b>	<b>Post-n=80</b>	
Age, years, median (IQR)	79 (68-86)	78.5 (65-86)	0.29 <sup>‡</sup>
Sex, %			0.52*
Female	37.5	42.5	
Male	62.5	57.5	
<b>Verified indications for Foley catheter placement among necessary orders</b>	<b>Pre-n=51</b>	<b>Post-n=71</b>	<b>P</b>
Urinary retention, %	32	66	0.0001*
Prolonged immobilization, %	6	3	0.4*
Stage III/VI skin breakdown, %	4	4	0.93*
Palliative care, %	14	4	0.09 <sup>§</sup>
Strict output monitoring <sup>¶</sup> , %	8	1	0.16 <sup>§</sup>
Critical care, %	4	10	0.3 <sup>§</sup>
Epidural catheter in place, %	0	0	-
Perioperative use, %	39	15	0.003*

<sup>‡</sup>Wilcoxon Two-sample test; \*Chi-Square test; <sup>§</sup>Fisher's exact test; <sup>¶</sup>In patients with impaired sensorium

the effectiveness of modifying access to urinary catheter placement kits on medical-surgical floors that showed a significant reduction in unnecessary Foley placements and reduction in CAUTI rates. While our single-center study showed promising results, it is limited by the small sample size; therefore, larger studies are needed to further evaluate effectiveness of this intervention.

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### Conflicts of Interest

We have no financial or other conflicts of interest to disclose.

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