LESS IS MORE

Medical Directive for Urinary Catheter Removal by Nurses on General Medical Wards

Leaving a urinary catheter (UC) in place without indication has been identified as one of “Five Things Physicians and Patients Should Question” by the Society of Hospital Medicine and the Canadian Society of Internal Medicine.1,2 On a busy general medical (GM) ward, delays in reassessment of UCs can lead to catheter-associated urinary tract infection (CAUTI).3 Interventions aimed at physicians reduce unnecessary UC use,4 but empowering nurses to remove UCs through the use of medical directives remains an underused strategy.5

Methods | A controlled before-and-after study in GM patients admitted to a large academic hospital was performed to evalu-
Let us consider the following statements from the document:

- The impact of a medical directive allowing nurses to remove UCs that met prespecified criteria, and (2) provide standardized postcatheter care using an algorithm to detect and manage urinary retention (FIGURE). These criteria were developed in collaboration with all GM attending physicians. Nurses participated in a 20-minute training session about applying the medical directive on patient transfer to the ward and at the beginning of every shift. Two GM wards implemented this medical directive (September 10 to December 17, 2014), leaving 2 GM control wards where UC discontinuation relied on usual practice. The primary outcome was the number of UC-days per patient-days measured using a locally validated electronic surveillance tool. The secondary outcome was the development of CAUTI per 1000 patient-days, by guideline-based criteria, between the study period and 4 months prior (May 1 to September 9, 2014). The significance of differences in proportion between control and intervention wards was assessed by χ2 test. Difference in catheter duration was also assessed between groups using a non-parametric regression model accounting for clustering of catheter days within patients. We obtained approval from the research ethics board of Sunnybrook Health Sciences Centre. All data was deidentified and informed consent was waived.

**Results** | At baseline, UC-days per patient-days at the ward level and average catheter duration at the patient level were similar between intervention and control wards (Table). Following implementation of the medical directive, UC-days per patient-days decreased significantly on intervention (410 of 4816 days [8.5%]; 95% CI, 7.8%-9.3%) compared with control wards (794 of 5364 days [14.8%]; 95% CI, 13.9%-15.8%; P < .001), as did average UC duration (3.6 vs 2.8 UC-days; P = .05). No UC reinsertion on the intervention wards resulted from inappropriate UC removal. Baseline CAUTIs per patient-days were 11 of 6503 (1.7 per 1000 patient-days) and 10 of 7011 (1.4 per 1000 patient-days) on intervention and control units, respectively. The medical directive decreased CAUTIs per patient-days to 1 per 4816 (0.2 CAUTIs per 1000 patient-days), significantly below control wards during the study period (8 of 5364 or 1.5 CAUTIs per 1000 patient-days; P = .03).

**Discussion** | We observed a significant decrease in UC use and CAUTIs following implementation of a medical directive allowing nurses to remove UCs, compared with wards that relied on usual practice.

Our experience adds to the literature supporting medical directives to reduce UC use and provides an example of a directive specifically designed for GM patients. The key to implementing this intervention was obtaining consensus among all GM physicians regarding criteria for UC removal and engaging nurse leaders. Training of each frontline nurse required less than half an hour and resulted in no inappropriate UC removals.

This study involved only 2 inpatient wards with a short follow-up period. A decrease in UC use among control units was detected, likely related to greater awareness of all the GM physicians because we engaged them to develop the criteria for UC removal. The directive has since been implemented on all medical wards at our hospital. The criteria for UC removal were developed for GM wards and would not be suitable for other patient populations. Medical directives for UC removal by nurses on GM wards warrant broader uptake to limit inappropriate UC use and reduce in-hospital CAUTI rates.

**Table. Urinary Catheter Use and CAUTIs Before and After Implementation of a Medical Directive Allowing Nurses to Remove UCs for General Medical Patients Who Met Prespecified Criteria**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline Period</th>
<th>Study Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Intervention</td>
</tr>
<tr>
<td>UC-days, No.</td>
<td>264</td>
<td>252</td>
</tr>
<tr>
<td>Patient-days, No.</td>
<td>1410</td>
<td>1332</td>
</tr>
<tr>
<td>UC-days per patient-days,</td>
<td>18.7</td>
<td>18.9</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catheter duration in days,</td>
<td>3.4 (4.8)</td>
<td>3.8 (4.3)</td>
</tr>
<tr>
<td>mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAUTIs per 1000 patient-days, No.*</td>
<td>1.4</td>
<td>1.7</td>
</tr>
<tr>
<td>UC reinsertions, No.</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Abbreviations: CAUTIs, catheter-associated urinary tract infection; UC, urinary catheter.

*CAUTIs were defined by presence of guideline-based criteria during the study period compared with 4 months prior.

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Editor’s Note
Risks Associated With Catheters

When I was an intern, we frequently placed urinary catheters in hospitalized patients. For some diagnoses, like congestive heart failure, we believed placement of a urinary catheter was almost mandatory to accurately measure fluid output during diuresis. We were well meaning and thought more monitoring of intake and output meant better care. The problem was that we focused more on getting information than how it actually added value to our clinical assessment, and we did not consider the possible and likely complications of catheter placement. In most cases, the risks of catheter placement outweigh any possible benefits.

We are familiar with the dramatically increased risk of infection in patients with urinary catheters. But their immobilizing effects are equally serious. Saint et al1 has described the urinary catheter as a 1-point restraint that renders the hospital patient bedbound. Hospital immobility leads to more weakness and hospital-acquired disability, a syndrome in which older patients leave the hospital with new and often permanent disabilities in their basic activities of daily living, even when their medical diagnoses are successfully treated. This disability renders patients in need of institutional long-term care or care by family or friends. There is emerging evidence that the urinary catheter is an instigator of hospital-acquired disability.2

It is best to avoid placing urinary catheters. However, when catheters are placed, Leis et al3 described a pragmatic and innovative approach to help us remove them as expeditiously as possible. By empowering nurses to remove urinary catheters that are no longer needed, they were able to markedly reduce the number of days patient spent with these catheters. This is a promising innovation. We need more team-based interventions that improve patient care and safety.

Kenneth E. Covinsky, MD

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HEALTH CARE REFORM
Changes in Discharge Location and Readmission Rates Under Medicare Bundled Payment

Patients are often referred for postacute care after hospitalization to improve outcomes and reduce readmissions. The use of postacute care has grown rapidly, with costs doubling since 2001.1,2 Although such care can take place at home, skilled nursing facilities, or inpatient rehabilitation facilities, facility-based care is more expensive,3,4 but whether it is more effective remains unknown.

In 2013, NYU Langone Medical Center (NYULMC) joined the national Bundled Payment for Care Improvement (BPCI) model for patients with Medicare fee-for-service insurance undergoing cardiac valve replacement, major joint replacement in the lower extremities, or spinal fusion.5 The BPCI model held NYULMC accountable for costs incurred from the index admission to 90 days after discharge. To control these costs, NYULMC attempted to shift referrals from facility-based to home-based postacute care. In the context of this shift in referrals, we examined the change in hospital readmission rates.

Methods | We used complete claims data provided by Medicare. We divided the study period into 3 phases. Medicare provided baseline data from July 1, 2009, through May 30, 2012, for 3070 patients. Because of a storm Sandy, NYULMC was closed from October 29 through December 27, 2012. From January 1 through September 30, 2013, NYULMC began preparations for BPCI, but cost incentives were not in effect (preparation period). From October 1, 2013, through August 31, 2014, cost incentives took effect (risk-bearing period) (1594 patients). Inclusion criteria were determined by the BPCI model. This study was approved by the institutional review board of the NYULMC; the institutional review board of the NYU School of Medicine waived the need for patient authorization and consent.

Data were assessed from July 1, 2009, to December 31, 2014. For each condition, we examined whether the risk-bearing period was associated with discharge to postacute care in a facility. We also examined whether the BPCI period was associated with 30-day readmission for each condition. For all models, we used generalized estimating equations, controlled for age, race, sex, and major complications or comor-