Catheter-Associated Urinary Tract Infection Prevention in the Oncology Population: An Evidence-Based Approach

Nora Love, MS, RN, CURN, CNS, OCN®, and Debra Rodrigue, MA, RN-BC

Background and Significance

A literature review including the search terms CAUTI, indwelling Foley catheter, and healthcare-associated infections, was conducted through PubMed, Cochrane, and CINAHL® to include research studies and guidelines from 2000 to present. The literature contained limited prospective studies on infections and indwelling catheters, but did reference the guidelines set forth by the CDC, the Society for Healthcare Epidemiology of America (SHEA), and the Institute for Healthcare Improvement (IHI), 2011.

In a retrospective cohort study conducted by Wald, Ma, Bratzler, and Kramer (2008), Medicare inpatients (N = 35,904) undergoing major surgery (e.g., coronary bypass and other open-chest cardiac operations, vascular surgery, general abdominal colorectal surgery, hip or knee total joint arthroscopy) were analyzed from 2,965 acute care hospitals in the United States. The results of the study suggested an association between duration of catheterization and the development of a UTI. In the study, patients undergoing major operations with postoperative catheterizations for longer than two days were more likely to experience adverse outcomes (Wald et al., 2008).

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O ne of the greatest threats to patient safety is the acquisition of healthcare-associated infections (HAIs) (Centers for Disease Control and Prevention [CDC], 2010). A urinary tract infection (UTI) is an infection of the kidney, ureter, bladder, or urethra (Ballentine, 2013). UTIs account for 40% of all HAIs (Klevens et al., 2007). Among UTIs acquired in the hospital, about 80% are associated with an indwelling urinary catheter (Saint & Chenoweth, 2003). An estimated 12%–25% of hospitalized patients receive this type of catheter at some point during their hospital stay (Saint et al., 2000). A direct positive relationship has been established between length of catheterization and the risk of developing a UTI. Therefore, catheters should only be used for appropriate indications and should be removed as soon as they are no longer needed (Lo et al., 2008).

Starting in 2008, the Centers for Medicare and Medicaid Services (2007) listed catheter-associated UTIs (CAUTIs) as a preventable hospital-acquired complication. As part of the 2013 National Patient Safety Goals, the Joint Commission stated that organizations were to implement an evidence-based practice to prevent CAUTIs (Joint Commission, 2012). In March 2012, a task force at Memorial Sloan-Kettering Cancer Center (MSKCC) assembled to address that issue. The task force included clinical nurse specialists, infection control nurses, and front-line patient RNs to establish a program for the prevention of CAUTIs, tailoring it to the specific needs of the oncology population. The task force met on a monthly basis, with a roll-out date of October 2012 for the revised evidence-based policies and education initiative.

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In a prospective randomized trial, Alessandri, Mistrangelo, Lijol, Ferrero, and Ragni (2006) reported on the impact of the timing of indwelling catheter removal in women undergoing vaginal or abdominal hysterectomy on UTIs. Study groups compared the removal of the catheter in the operating room (Group A), six hours after surgery (Group B), and 12 hours after surgery (Group C). The study suggested that removing an indwelling catheter immediately after an uncomplicated hysterectomy reduced postoperative complications (Alessandri et al., 2006). Of note, no cancer-specific studies were reported in the current literature review.

The MSKCC task force’s primary source for guidelines used was SHEA’s Strategies to Prevent CAUTI in Acute Care Hospitals (Lo et al., 2008). The document focuses on prioritizing CAUTI prevention by using four components of care: (a) avoiding unnecessary urinary catheters, (b) inserting urinary catheters using sterile technique, (c) maintaining urinary catheters based on recommended guidelines, and (d) reviewing urinary catheter necessity daily and removing promptly. In addition, using the CDC’s guidelines for the prevention of CAUTI (CDC, 2010), an updated version from the original published in 1981, offered more recommendations for implementing CAUTI prevention strategies within MSKCC’s nursing practice, including insertion criteria, use of an insertion bundle, and the use of a maintenance bundle to ensure consistency in practice.

Another vital resource employed was the IHI’s (2011) How-to Guide: Prevent Catheter Associated Urinary Tract Infection. That key document directed the task force’s improvement efforts of insertion technique and routine maintenance care, in addition to implementing interventions and measuring these improvements.

Implementation of Evidence-Based Practice

In their article about evidence-based practice, Winter and Echeverri (2012) stated that role modeling and the integration of skills are important components in the development of clinical programs. The MSKCC CAUTI task force designed a hospital-wide education program focusing on CAUTI prevention to ensure all nursing staff received comprehensive evidence-based information on such care. The program included a didactic section as well as a practical skills return demonstration segment. Instructional as well as clinical scenarios and case studies were developed to illustrate main points.

In the lecture series, teaching strategies included background information on the four components of care, explicit criteria for appropriate catheter insertion (see Figure 1), alternatives to indwelling catheters, practice variations for male and female patients, catheter maintenance procedures (see Figure 2), and pediatric guidelines. Although pediatrics is not measured in CAUTI rates because the National Patient Safety Goal surrounding CAUTI is not applicable to the pediatric population, the task force felt strongly about including this group in the standard of care.

One of the greatest challenges faced in reviewing the evidence was the need to identify how to implement a daily review of catheter necessity and the prompt removal of unnecessary catheters. The process needed to be reliable and consistent if rate reduction was to be met. As chart reminders were historically unreliable, an electronic system seemed to be the solution. In collaboration with the Nursing Informatics department, an alternative workflow process was developed. The two unique processes created for the program included an electronic nursing assessment flow sheet document and a nursing algorithm (see Figure 3). The nursing
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References


