A small rehabilitation hospital in northern Arkansas had a problem with catheter-associated urinary tract infections (CAUTI). A review of practices and policies provided no reason for the trend. The facility trialed an ionic silver Foley catheter finding that it dramatically reduced the incidence of CAUTI in their patient population.

Key Words: Catheter, urinary tract infection, ionic silver Foley catheter, rehabilitation, long-term care, silicone, latex.

A Rehabilitation Hospital’s Experience with Ionic Silver Foley Catheters

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The incidence of catheter-associated urinary tract infections (CAUTI) continues to be problematic at all points of care. For long-term care, CAUTI will be magnified when Pay for Performance (P4P) seeks to stimulate better care and improved patient outcomes. P4P is a move to use quality measures with patient outcomes tied to reimbursement (Agency for Healthcare Research and Quality, 2006). In the case of bladder health, progress toward improved continence as well as reduction in urinary tract infection rates continues to be of primary importance (Saint, 2000). The P4P project has begun in selected states but is projected for implementation nationwide during 2008. This health care quality initiative will encompass hundreds of quality measures within long-term care and home health care with resulting impact on acute care environments.

In an ideal world, nurses would like to have all patients free from Foley catheters, out of briefs, and fully and independently continent. However, without any new technological advances, the reality is that there will always be a small percentage of patients in long-term care, subacute care, and home health who require indwelling Foley catheters. Our journey toward decreasing CAUTI in a chronically catheterized patient population is detailed.

When Are Foleys Acceptable?

Foley catheters should only be used when medically indicated. Some patients are identified as appropriate for long-term catheterization. These conditions include critical illness requiring close monitoring of intake and output, severe cognitive dysfunction, acute care ventilatory support, neurogenic bladder, and extensive wound care needs (Agency for Health Care Policy and Research, 1996). For all other Foley catheter uses, a facility’s goal should focus on continually reassessing a patient’s need for catheterization. The expectation is that interventions will be directed toward assisting patients to regain bladder continence, but we understand that there will always be...
patients who need long-term Foley catheters because of their conditions.

What Determines the Selection of Catheter?

When a catheter is clinically indicated, thought goes into what type of catheter is best suited for the patient or resident. Decisions are made in collaboration with physicians, taking into consideration the character of the urine, presence of latex allergy, and existing knowledge of the patient’s history of catheter-associated urinary tract infections. Additionally, a decision is made as to size and material of the catheter.

Many institutions have begun the process of converting to latex-free supplies. Our efforts were in this direction when selecting a Foley catheter. In addition to being latex-free, a #16 French 100% silicone Foley catheter has a larger inner lumen than a #16 French latex catheter. This difference is linked to the manufacturing process; silicone can be extruded rather than formed. The 100% silicone catheter with a larger lumen diameter may offer better flow for patients who have high sediment urine or mucus threads. Once a catheter is placed, microorganisms that have been introduced during the catheter insertion will begin to reproduce. Bacteria prefer the latex material to begin biofilm formations; however, silicone catheters eventually succumb to biofilm given time (Kunin, Chin, & Chambers, 1987).

Silver has been used as an antimicrobial for centuries. This is evident in ancient writings by Hippocrates (300 B.C.), who discussed the use of silver in wound care. Silver has long been utilized in wound care dressings and is becoming an industry standard for its antimicrobial activity. Silver-coated Foley catheters have been on the market for almost 10 years but are not the standard of care within any of the health care markets.

Studies have demonstrated that biofilm development on urethral catheters can be reduced in vitro when silver is added to the catheter construction (Ahearn et al., 2000). Research has been predominantly positive that a silver-coated catheter can reduce CAUTI in patients (Bologna et al., 1999; Gentry & Cope, 2005; Karchmer, Giannetta, Muto, Strain, & Farr, 2000; Lai & Fontecchio, 2002; Rupp et al., 2004, Seymour, 2006). Studies have focused on the acute care market more than in nursing homes, long-term acute care, and rehabilitative hospitals.

New Twist

When we embarked on this journey, our facility was very familiar with latex versus silicone catheters as well as the different catheter types: straight intermittent catheters, triple lumen irrigation Foleys, and coudé catheters. The majority of our patients were using traditional Foley catheters, and we were not aware that silver technology had been applied to Foley catheters.

Our 42-bed rehabilitation hospital in northern Arkansas was interested in evaluating the use of silver Foley catheters in an effort to decrease CAUTIs. Approximately 95% of the admissions are from acute care settings. Our patients come to us after post-surgical orthopedics, neurological events, or for short-term neurosurgical rehabilitation. The average length of stay is 13 days, with approximately 85% of patients discharged back to the community.

Our facility has about 5% to 10% of patients with Foley catheters at any given time. The incidence of catheter-associated urinary tract infections was identified as problematic. The goal is always to decrease the number of CAUTIs along with decreasing the number of indwelling catheters.

As the infection control nurse and the nurse manager, the authors were ready to try something new to decrease the incidence of CAUTI. Our existing policy for catheterized transfer patients included assessing for ongoing need for catheterization. If the catheter could be discontinued, it was removed after taking a urine specimen for culture and sensitivity. Patients transferring in with a CAUTI were identified upon arrival. In patients who were not candidates for catheter removal (such as extensive wounds or neurogenic bladder), a urine culture was obtained from the catheter, and it would remain in place.

The facility made a decision to change out regular Foley catheters to 100% silicon, ionic silver Foley catheters. Prior to product change out, the incidence of CAUTIs is shown in Table 1. In preparing for this product change out, cost was a point of discussion because the ionic silver Foley catheter is more expensive than the standard latex catheter. The cost of a CAUTI can be a significant financial burden on both the patient and the facility (Plowman, Graves, Esquivel, & Roberts, 2001; Rupp et al., 2004). Our facility had to balance these factors. Ultimately, the decision would be based on what was best for the patients. If the ionic silver Foley catheter could reduce CAUTI incidence, we could balance the cost with our improved patient outcomes. In putting the patient first, the facility also focused on quality. P4P in full implementation will withhold...
dollars from institutions that cannot demonstrate quality of care validated by positive patient outcomes. So for our patients and our facility, this new venture could be a definite win-win situation.

The product change began in November 2006. Over the next 6 months, our procedure with transferred patients changed slightly. If the patient was admitted to the facility with a catheter, an assessment was made as to the necessity of a Foley catheter. If the patient was a candidate for removal, a urine culture was still sent and the catheter was removed. Any patient admitted to the unit who required an indwelling Foley catheter was switched to the ionic silver Foley catheter. Data collected during the 6-month trial period are shown in Table 2.

Table 2. Data Collected During the 6-Month Trial Period with Ionic Silver Foley Catheter

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Nosocomial CAUTI</th>
</tr>
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<tr>
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<td>0</td>
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<tr>
<td>December 2006</td>
<td>0</td>
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<tr>
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Conclusion

As nurses who care about our patients and their outcomes, we are very excited about these findings—a 100% drop in CAUTI incidence was a wonderful argument for continuing the use of the ionic silver Foley catheters. So when we are asked to justify the increased cost for the ionic silver Foley catheter, we can say with great conviction that making this change positively impacted our patient outcomes and enhanced our catheterized patients’ experience. A hospital stay without a CAUTI should be every facility’s goal.

References


