Using Silver-Coated Catheters to Reduce CAUTIs: A Literature Review

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Catheter Associated Urinary Tract Infections

Catheter associated urinary tract infections (CAUTIs) are the most common type of healthcare-associated infection in the United States, accounting for 40% each year. Utilizing the Consumer Price Index, it’s estimated that CAUTIs cost $340 million to $370 million in annual inpatient hospitalizations. The Centers for Medicare and Medicaid Services have identified CAUTIs as preventable and have reduced reimbursement payments to hospitals for CAUTI treatment. It is therefore in the best interest of patients and hospitals to implement evidence-based plans and strategies to reduce CAUTI incidence.

The only way to completely prevent a CAUTI is to not insert an indwelling catheter at all, but if they must be inserted, the best way to prevent CAUTIs is to limit the number of inserted indwelling catheters. However, in appropriate circumstances, indwelling urinary catheters are a necessary and important part of patient care. HMC has developed and implemented evidence-based strategies for catheter insertion, care, and maintenance in an effort to reduce overall CAUTI rates. These strategies include:

- The use of sterile insertion technique
- The presence of a second RN during catheter insertion, to ensure sterility is maintained
- q8 hour cleansing of the catheter and insertion site with soap and water
- Frequent emptying of the urimeter (ICU—qh, IMC/Floor—q2h)
- Complete emptying of the collection bag q4 hours and prior to patient travel
- Maintaining collection bag position below the level of the bladder at all times
- The use of tape or catheter securement device to attach catheter tubing to the patient’s leg
- Staff awareness and education related to best-practices
- Daily nursing evaluation for the justification of continued catheter use
- Prompt discontinuation of indwelling catheters when indication is no longer present

CAUTIs in Stroke Patients

Patients hospitalized with stroke represent a uniquely complex and distinct patient population. Irrespective of indwelling catheter placement, stroke patients are at an increased risk for UTI and CAUTI development as compared to the general medical/surgical patient population. While the exact mechanism for this increase in risk is not known, scientific and clinical research points to a combination of factors including systemic inflammation, stroke induced immunosuppression, changes in sphincter control and increased bladder dysfunction, as well as the increased likelihood of indwelling catheter placement due to mental status changes, speech dysfunction, and patient’s decreased ability to communicate needs following acute stroke.

CAUTI rates in the Neuroscience Critical Care Unit (NCCU) are consistently higher than HMC benchmarked goals and represent an opportunity for enhanced patient care and improved patient outcomes. Staff in the NCCU is cognizant of this issue and is focused and committed to reduce CAUTI rates using a variety of methods, including increased awareness and education, task-force development, and consistent, conscientious bedside catheter care. In addition, the unit is committed to analysis, evaluation, and adoption of current evidence-based research into every day bedside practice.

Antimicrobial Silver-Coated Catheters

Silver-coated catheters have a coating of silver alloy that is formulated to inhibit bacteria and biofilm growth in the hopes of reducing the incidence of CAUTI. HMC has recently authorized a trial to evaluate the efficacy of anti-microbial silver-alloy catheters in CAUTI reduction at HMC. The 12-month, house-wide trial will replace currently used, standard latex catheters with an antimicrobial latex, silver-alloy catheter in the adult, inpatient population at HMC. In advance of silver-alloy catheter implementation, a review of current literature related to antimicrobial silver-coated catheters was performed.

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Conclusion

Despite the risk of CAUTI, indwelling urinary catheters are and will remain an integral part of patient care. The variety and complexity of individual patient populations create the need for a multi-factorial approach to CAUTI prevention. It is the anticipation that the implementation of the silver coated catheters will assist in decreasing CAUTI incidence at HMC. In addition to the implementation of new device technology, increased awareness and education of clinical staff, continued research and development of best-practices, and early catheter removal may all contribute to decreased CAUTI incidence. This reduction can help to eliminate costly complications and improve patient care.

References