Antimicrobial Catheters

Given the important clinical and economic consequences of catheter-associated urinary tract infection (CAUTI), researchers have tried novel approaches to prevent this common patient safety problem. While the primary preventive focus – as described under “General catheter-associated urinary tract infection (CAUTI) prevention practices” – has been on avoiding the indwelling catheter, using alternatives to the indwelling catheter, and removing the indwelling catheter as soon as possible, investigators have also assessed whether antimicrobial catheters can prevent CAUTI.

Several clinical and economic studies have evaluated antimicrobial urinary catheters, including individual trials, systematic reviews and meta-analyses. Economic evaluations are important to consider given the additional cost of antimicrobial catheter trays (approximately $5).

Different antimicrobial urinary catheters have been evaluated in patients over the past few decades, including silver (either alloy or oxide) and nitrofurazone-releasing catheters. While there have been numerous studies comparing either silver alloy or nitrofurazone-releasing catheters to non-coated catheters, we are unaware of any clinical trial that has directly compared silver alloy to nitrofurazone-releasing catheters.

A Cochrane Review of antimicrobial catheters conducted in 2008 included 23 trials involving 5236 hospitalized adults in 22 parallel group trials. Schumm and Lam wrote summarized their findings as follows: “...Silver alloy (antiseptic) coated or nitrofurazone-impregnated (antibiotic) urinary catheters might reduce infections in hospitalized adults ... but the evidence was weak.”...Larger, more scientifically rigorous, trials are needed on whether catheters impregnated with antibiotics or antiseptics reduce infection.”

While the studies to date appear to indicate that antimicrobial catheters reduce (or delay) bacteriuria, it remains unclear if these
novel catheters will reduce clinically more important endpoints, such as symptomatic infection or urinary tract-related bacteremia. However, in patients at high-risk of CAUTI (e.g., neutropenic and severely immune-compromised patients) or of developing a complication after bacteriuria occurs, or in those hospitals that have unacceptably high CAUTI rates despite adherence to other preventive strategies, antimicrobial catheters may play an adjunctive role in preventing CAUTI.