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EDITORIAL COMMENT

Catheter-associated urinary tract infection (CAUTI) is the most common hospital-acquired infection. Recently there has been increased attention to this because hospitals will no longer be reimbursed by Medicare for costs associated with CAUTI. The mainstays of prevention of CAUTI include avoiding catheters when possible, limiting their use to the minimal time span necessary, and practicing sterile placement techniques and appropriate catheter care. Currently, a number of companies produce catheters with specific coatings—typically some type of silver alloy—to inhibit bacterial growth.

In this study, the authors compared several different catheters coated with various substances to assess their ability to decrease bacteriuria. They noted that although those coated with antibiotic Nitrofurazone as well as those coated with nitric oxide significantly reduced bacterial growth, those coated with a silver alloy as well as the control catheters did not appear to decrease bacterial growth. The logical extension of this is that this phenomenon may translate into fewer CAUTIs in patients in whom Nitrofurazone or nitric oxide catheters are used. In fact, although a number of studies have demonstrated that catheters impregnated with various substances reduce the rate of asymptomatic bacteriuria, there is currently no evidence that this results in fewer CAUTIs.

Although the results of the current study are intriguing and deserve further study, it would be premature to recommend specially coated catheters to prevent CAUTI. Until there are studies to definitively demonstrate that the decreased rates of bacteriuria translate to fewer CAUTIs, there is no justification for the use of these catheters. In fact, most of the "antibacterial" catheters currently available depend on a silver alloy for their effect. Based on the results of this study, which found no significant antimicrobial activity in the silver alloy group, one could question whether there is even any potential for a decrease in CAUTI with such catheters. In addition, given the significantly higher costs of these "antibacterial" catheters, one should be very cautious and demand clinical outcomes data before starting to use them. It is hoped that translational studies that look for real improvements in CAUTI rates in patients with Nitrofurazone- and nitric oxide–impregnated catheters will be performed.

Howard B. Goldman, M.D., Center for Quality and Patient Safety, Glickman Urologic and Kidney Institute, The Cleveland Clinic; and Lerner School of Medicine, Case Western Reserve University, Cleveland, Ohio

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REPLY

We agree with the remarks outlined in the editorial and would like to stress the following: for an antimicrobial catheter to be considered effective, it must be able to completely inhibit

surface colonization. If this is not possible and the inhibition is slower than the doubling time of the bacteria, an infection will proliferate in the biofilm and likely lead to a CAUTI.

As the editor points out, a reduction of planktonic bacterial growth by itself does not necessarily correlate to clinical benefit. This situation is exemplified by the silver oxide experience and we agree that without data demonstrating CAUTI reduction, there is no justification for their clinical use. Antibiotics are effective in elimination of bacterial growth and thus much more effective in a clinical setting. However, issues such as emergence of antibiotic resistance and high pricing prompt us to scout for new cost-effective technologies. Nitric oxide, which is naturally used by our bodies to combat infections, holds great promise both in pricing and efficacy. Notably, our in vitro study did demonstrate complete inhibition of bacterial colonization within biofilm. Indeed, before widespread clinical use can be recommended, we need to progress rapidly to translational studies to provide level-one evidence of CAUTI reduction using a nitric oxide–impregnated catheter.

Yossef Av-Gay, Ph.D., and John C. Rewcastle, Ph.D.,
Department of Medicine, Division of Infectious Diseases, University of British Columbia, Vancouver, BC, Canada

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