LETTERS TO THE EDITOR

Home-Based Preoperative Chlorhexidine Bathing Cloths to Prevent Surgical Site Infection

To the Editor—We read with interest the article by Bailey et al[1] titled "Economic Value of Dispensing Home-Based Preoperative Chlorhexidine Bathing Cloths to Prevent Surgical Site Infection." In their background rationale, the authors quote 2 studies,[2,3] both of which share the same authors, that they say show "chlorhexidine to be the optimal antiseptic agent for preoperative bathing in orthopedic patients."[1(p465)] However, neither of these trials were randomized, because the comparison was between those who complied and those who did not comply with a chlorhexidine bathing regime. In fact, in both studies the authors caution that prospectively randomized studies with larger numbers of compliant patients should be performed to further confirm findings.

It seems inconceivable that Bailey et al would base their computer simulation model on these 2 studies rather than on results from a recently updated Cochrane review[4] that included all randomized controlled trials published in this area. The review, in fact, shows no clear evidence of benefit for preoperative chlorhexidine in the prevention of surgical site infection. However, the authors overlook the results of this review in favor of "written personal communication" to support their chlorhexidine simulation study. We find this article to be disconcerting and misleading, with computer modeling based on inappropriate data.

ACKNOWLEDGMENTS

Potential conflicts of interest. Both authors report no conflicts of interest relevant to this article.

Joan Webster, RN, BA;[1] Sonya Osborne, RN, PhD[2]

Affiliations: 1. Centre for Clinical Nursing, Royal Brisbane and Women's Hospital, Herston, Queensland, Australia; 2. School of Nursing and Midwifery, Queensland University of Technology, Kelvin Grove, Queensland, Australia.

Address correspondence to Prof Joan Webster, Level 2, Centre for Clinical Nursing, Royal Brisbane and Women's Hospital, Butterfield Street, Herston, Queensland 4029, Australia (joan_webster@health.qld.gov.au).

Infect Control Hosp Epidemiol 2011;32(10):1047-1055

0899-823X/2011/3210-0015$15.00. DOI: 10.1086/662020

REFERENCES

1. Bailey RR, Stuckey DR, Norman BA, et al. Economic value of dispensing home-based preoperative chlorhexidine bathing cloths to prevent surgical site infection. *Infect Control Hosp Epidemiol* 2011;32(5):465–471.
2. Zywiel MG, Daley JA, Delanois RE, Naziri Q, Johnson AJ, Mont MA. Advance pre-operative chlorhexidine reduces the incidence of surgical site infections in knee arthroplasty. *Int Orthop* 2011; 35(7):1001–1006.
3. Johnson AJ, Daley JA, Zywiel MG, Delanois RE, Mont MA. Preoperative chlorhexidine preparation and the incidence of surgical site infections after hip arthroplasty. *J Arthroplasty* 2010;25(6, suppl 1):98–102.
4. Webster J, Osborne S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. *Cochrane Database Syst Rev* 2007;(2):CD004985.

Reply to Webster and Osborne

To the Editor—We thank Webster and Osborne[1] for reading our study titled "Economic Value of Dispensing Home-Based Preoperative Chlorhexidine Bathing Cloths to Prevent Surgical Site Infection"[2] with such interest. However, we do not agree with their analysis of our study.

First, our study focused on a novel technology (nonwoven polyester cloth) for preoperative home-based chlorhexidine bathing, which is a technology fundamentally different from the focus of the Cochrane review by Webster and Osborne.[3] In their 2008 randomized study of skin surface antiseptic levels, Edmiston and colleagues demonstrated that the nonwoven polyester fiber cloth was associated with larger concentrations of chlorhexidine gluconate on the surface of the skin, which in turn led to greater reductions in skin flora for patients using the polyester cloth, compared with patients who bathed using only the chlorhexidine liquid soap and a cotton cloth.[4] Although the Cochrane review provided a landscape of the interventions available, it did not include any studies that used the innovative chlorhexidine cloth.[3] The studies by Johnson et al[5] and Zywiel et al,[6] which were used to calibrate the base case of our simulations, further examine the antimicrobial potential of this novel technology, which is a fundamentally different application than the bathing described in the current Cochrane review.[3]

Second, our study clearly acknowledges the limitations of the Johnson et al[5] and Zywiel et al[6] study designs and therefore included broad sensitivity analyses that varied cloth efficacy (10%, 25%, 50%, and 75%) and patient compliance (0.25 to 2.0 times the baseline compliance distribution; mean [range] compliance, 15.3% [8.32%–20.0%]). Our analyses delineate the epidemiologic and economic value of preoperative bathing across these parameter ranges. We found that, even at a cloth efficacy as low as 10%, the intervention could still be cost-effective with increased patient compliance.[2]

Computational modeling can be a powerful tool when limited data are available from clinical studies, providing a land-

scape of conditions (ie, efficacy and compliance) under which preoperative bathing may be economically favorable. Describing the parameters that our model was most sensitive to can help aid the direction of future clinical research. Future studies that evaluate both the local compliance to and efficacy of chlorhexidine bathing with a nonwoven fiber cloth are needed and will allow decision makers to determine the potential value of preoperative bathing in their facilities.

ACKNOWLEDGMENTS

Potential conflicts of interest. All authors report no conflicts of interest relevant to this article.

Rachel R. Bailey, PhD, MPH;[1,2,3] Dianna R. Stuckey;[1,2,3] Bryan A. Norman, PhD;[4] Andrew P. Duggan;[4] Kristina M. Bacon, MPH;[1,2,3] Diana L. Connor, MPH;[1,2,3] Ingi Lee, MD, MSCE;[5,6] Robert R. Muder, MD;[7] Bruce Y. Lee, MD, MBA[1,2,3]

Affiliations: 1. Section of Decision Sciences and Clinical Systems Modeling, University of Pittsburgh, Pittsburgh, Pennsylvania; 2. Department of Biomedical Informatics, University of Pittsburgh, Pittsburgh, Pennsylvania; 3. Department of Epidemiology, University of Pittsburgh, Pittsburgh, Pennsylvania; 4. Department of Industrial Engineering, University of Pittsburgh, Pittsburgh, Pennsylvania; 5. Division of Infectious Diseases, Department of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania; 6. Center for Evidence-Based Practice of the University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania; 7. Division of Infectious Diseases, Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, Pennsylvania.

Address correspondence to Rachel R. Bailey, PhD, MPH, Public Health Computational and Operations Research (PHICOR), University of Pittsburgh, 3520 Forbes Avenue, First Floor, Pittsburgh, PA 15213 (RRB16@pitt.edu).

Infect Control Hosp Epidemiol 2011;32(10):1047-1048

 0899-823X/2011/3210-0016$15.00. DOI: 10.1086/662024

REFERENCES

1. Webster J, Osborne S. Home-based preoperative chlorhexidine bathing cloths to prevent surgical site infection. *Infect Control Hosp Epidemiol* 2011;32(10):1047 (in this issue).
2. Bailey RR, Stuckey DR, Norman BA, et al. Economic value of dispensing home-based preoperative chlorhexidine bathing cloths to prevent surgical site infection. *Infect Control Hosp Epidemiol* 2011;32(5):465–471.
3. Webster J, Osborne S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. *Cochrane Database Syst Rev* 2007;2:CD004985.
4. Edmiston CE Jr, Krepel CJ, Seabrook GR, Lewis BD, Brown KR, Towne JB. Preoperative shower revisited: can high topical antiseptic levels be achieved on the skin surface before surgical admission? *J Am Coll Surg* 2008;207(2):233–239.
5. Johnson AJ, Daley JA, Zywiel MG, Delanois RE, Mont MA. Preoperative chlorhexidine preparation and the incidence of surgical site infections after hip arthroplasty. *J Arthroplasty* 2010;25(6, suppl 1):98–102.
6. Zywiel MG, Daley JA, Delanois RE, Naziri Q, Johnson AJ, Mont MA. Advance pre-operative chlorhexidine reduces the incidence of surgical site infections in knee arthroplasty. *Int Orthop* 2011; 35(7):1001–1006.

Effect of Intranasal Mupirocin and Chlorhexidine Body Wash on Decolonization of Community-Associated Methicillin-Resistant *Staphylococcus aureus*

To the Editor—Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) infection first emerged in early 1990s in Australia.[1] Most patients with CA-MRSA infection present with mild skin and soft-tissue infection, but some patients may present severe clinical manifestations, such as necrotizing pneumonia, severe sepsis, or necrotizing fasciitis, resulting in fatalities.[2-5]

In Hong Kong, CA-MRSA infection has been a notifiable infectious disease since January 2007. A case of CA-MRSA infection is defined as an occurrence of clinically compatible illness with isolation of MRSA from any clinical specimen with the following genetic characteristics: presence of staphylococcal cassette chromosome *mec* (SCC*mec*) gene type IV or V and Panton-Valentine leukocidin gene.

We telephone-interviewed all CA-MRSA infection case patients, using a standardized questionnaire to obtain clinical and relevant exposure history. We offered empirical decolonization therapy (5-day course of twice-daily mupirocin nasal ointment 2% and daily body wash using 4% chlorhexidine gluconate) to all patients and their home contacts. Before the therapy, nasal and axilla swabs were taken from the patients and their home contacts to screen for CA-MRSA colonization. For CA-MRSA carriers identified during initial screening, nasal and/or axilla swabs were collected 2 weeks after the therapy was finished.

Studies on the effectiveness of decolonization therapy for MRSA carriage in healthcare settings have been widely reported.[6] However, studies specific to CA-MRSA decolonization have seldom been reported. We carried out a retrospective review of CA-MRSA infections in Hong Kong to measure the percentage of CA-MRSA carriers who could be successfully decolonized and the associated factors.

We reviewed case records of all patients with CA-MRSA infection reported from 2007 to 2009. The information we retrieved included demographic characteristics, past health, relevant exposure history, SCC*mec*-typing results of the MRSA isolates of the patients, and screening-swab results before and after decolonization therapy.

We defined a CA-MRSA carrier as a person with a screening swab positive for CA-MRSA before decolonization therapy. Successful decolonization was defined as microbiological clearance of CA-MRSA at the carriage site after decolonization therapy. Percentage of successful decolonization was the percentage of carriers that had screening swabs negative for