

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 29, NUMBER 2

FEBRUARY 2008

ORIGINAL ARTICLES

- 99 **Influenza Vaccination Among Registered Nurses: Information Receipt, Knowledge, and Decision-Making at an Institution With a Multifaceted Educational Program** • Cori L. Ofstead, MSPH; Sharon J. Tucker, PhD, RN; Timothy J. Beebe, PhD; Gregory A. Poland, MD
- 107 **Commentary: Improving Rates of Influenza Vaccination Among Healthcare Workers: Educate; Motivate; Mandate?** • Thomas R. Talbot, MD, MPH
- 111 **Use of a Pandemic Preparedness Drill to Increase Rates of Influenza Vaccination Among Healthcare Workers** • Jennifer L. Kuntz, MS; Stephanie Holley, BSN; Charles M. Helms, MD, PhD; Joseph E. Cavanaugh, PhD; Jeff Vande Berg, MS; Loreen A. Herwaldt, MD; Philip M. Polgreen, MD, MPH
- 116 **Extended Use of Urinary Catheters in Older Surgical Patients: A Patient Safety Problem?** • Heidi L. Wald, MD; Anne M. Epstein, PhD; Tiffany A. Radcliff, PhD; Andrew M. Kramer, MD
- 125 **Salvage of Long-Term Central Venous Catheters During an Outbreak of *Pseudomonas putida* and *Stenotrophomonas maltophilia* Infections Associated With Contaminated Heparin Catheter-Lock Solution** • M. Beatriz Souza Dias, MD, PhD; Alina Bernardes Habert, MD; Vera Borrasca, RN; Valeska Stempliuk, RN, PhD; Aina Ciolli, RN; M. Rita E. Araújo, MD; Silvia F. Costa, MD, PhD; Anna S. Levin, MD, PhD
- 131 **Randomized Controlled Trial and Meta-analysis of Oral Decontamination with 2% Chlorhexidine Solution for the Prevention of Ventilator-Associated Pneumonia** • Hutsaya Tantipong, MD; Chantana Morkchareonpong, MD; Songyod Jaiyindee, MD; Visanu Thamlikitkul, MD
- 137 **Measuring Acceptable Treatment Failure Rates for Community-Acquired Pneumonia: Potential for Reducing Duration of Treatment and Antimicrobial Resistance** • Keith S. Kaye, MD, MPH; Anthony D. Harris, MD, MPH; Jay R. McDonald, MD; Larry J. Strausbaugh, MD; Eli Perencevich, MD, MS; Infectious Diseases Society of America Emerging Infections Network
- 143 **Importance of Bacterial Burden Among Methicillin-Resistant *Staphylococcus aureus* Carriers in a Long-Term Care Facility** • Nimalie D. Stone, MD; Donna R. Lewis, MSN; H. K. Lowery, MS; Lyndsey A. Darrow, BS; Catherine M. Kroll, MPH; Robert P. Gaynes, MD; John A. Jernigan, MD, MS; John E. McGowan, Jr., MD; Fred C. Tenover, PhD; Chesley L. Richards, Jr., MD, MPH
- 149 **Risk of Hand or Glove Contamination After Contact With Patients Colonized With Vancomycin-Resistant *Enterococcus* or the Colonized Patients' Environment** • Mary K. Hayden, MD; Donald W. Blom, BSN; Elizabeth A. Lyle, AB; Charity G. Moore, PhD; Robert A. Weinstein, MD
- 155 **Patient Attitudes Regarding Participation in Studies of Antimicrobial Resistance** • Pam Tolomeo, MPH, CCRP; Mary Wheeler, CCRP; Joshua P. Metlay, MD, PhD; Katrina Armstrong, MD; Neil O. Fishman, MD; Warren B. Bilker, PhD; Ebbing Lautenbach, MD, MPH, MSCE
- 160 **Clinical and Economic Consequences of Failure of Initial Antibiotic Therapy for Hospitalized Patients With Complicated Skin and Skin-Structure Infections** • John Edelsberg, MD, MPH; Ariel Berger, MPH; David J. Weber, MD, MPH; Rajiv Mallick, PhD; Andreas Kuznik, PhD; Gerry Oster, PhD



CONTENTS CONTINUED INSIDE

The Official Journal of the Society for Healthcare Epidemiology in America

Coming Soon

From Baxter Healthcare Corporation:

New Power to Fight

for your patients



Visit www.newpowertofight.com

Options at work.



MEDICATION DELIVERY

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 29, NUMBER 2

FEBRUARY 2008

CONTENTS CONTINUED FROM COVER

CONCISE COMMUNICATIONS

- 170 **Receptivity to Mandatory Influenza Vaccination Policies for Healthcare Workers Among Registered Nurses Working on Inpatient Units** • Gregory A. Poland, MD; Cori L. Ofstead, MSPH; Sharon J. Tucker, PhD, RN; Timothy J. Beebe, PhD
- 174 **House Staff Attitudes About Influenza Vaccination After Participation in a Clinical Trial to Improve Vaccination of Hospital Patients** • Javier Cabello, MD; Krishna Das, MD; William E. Trick, MD; Mary N. Gerard, MD; Marjorie Charles-Damte, RN
- 177 **Around-the-Clock, Rapid Diagnosis of Influenza by Means of Membrane Chromatography Antigen Testing Confirmed by Polymerase Chain Reaction** • Anna C. Nilsson, MD; Birgitta Alemo; Per Björkman, MD, PhD; Lena Dillner, MD, PhD; Åsa Melhus, MD, PhD; Berit Nilsson; Anders Widell, MD, PhD
- 180 **Macrolide and Clindamycin Resistance in *Staphylococcus aureus* Isolates and Antibiotic Use in a Veterans Affairs Medical Center** • Rohit Modak, MD; David Ross, MD, PhD; Virginia L. Kan, MD
- 183 **Medical Students' Exposure to Bloodborne Pathogens in the Operating Room: 15 Years Later** • Connie J. Chen, BS; Rachel Gallagher, MD; Linda M. Gerber, PhD; Lewis M. Drusin, MD, MPH; Richard B. Roberts, MD

LETTERS TO THE EDITOR

- 186 **Employee Thoughts on Influenza Vaccine: Here We Go Again** • Noreen H. Chan-Tompkins, PharmD; Andrew Sahud, MD; Deborah Pucci, RN, BSN, CCM; Cheryl Herbert, RN, CIC
- 187 **Is Diarrhea Enough to Assess the Severity of *Clostridium difficile* –Associated Disease?** • M. Raffat Jaber, MD; Mark Reeves, MD, PhD; James Couperus, MD
- 189 **Reply to Jaber et al.** • Erik R. Dubberke, MD; Justin Sadhu, MD; Robert Gatti, BS; Kimberly A. Reske, MPH; John F. DiPersio, MD, PhD; Steven M. Devine, MD; Victoria J. Fraser, MD
- 190 **Efficacy of Sodium Hypochlorite-Based Disinfectants Against *Clostridium difficile* Spores** • Joan Holtschlag, BS
- 191 **Reply to Holtschlag** • Warren N. Fawley, PhD; Sarah Underwood, BSc; Jane Freeman, PhD; Simon D. Baines, PhD; Katie Saxton, BSc; Keith Stephenson, PhD; Robert C. Owens, Jr., MD; Mark H. Wilcox, MD
- 192 **Should Test Methods for Disinfectants Use Vertebrate Viruses Dried on Carriers to Advance Virucidal Claims?** • M. Khalid Ijaz, DVM, PhD; Joseph Rubino, BA, MA
- 194 ***Staphylococcus aureus*: What Are the Levels of Contamination of Common-Access Environmental Surfaces?** • Maureen Boost, D Phil, MPH; Margaret O'Donoghue, PhD; See Chung Him, BSc (Hons), MLT (HK); Cheung Man Keung, BSc (Hons), MLT (HK)

An Official Publication of the Society for Healthcare Epidemiology of America

EDITOR

Suzanne F. Bradley, MD • Ann Arbor, MI

DEPUTY EDITOR

Carol A. Kauffman, MD • Ann Arbor, MI

SENIOR ASSOCIATE EDITORS

C. Glen Mayhall, MD • Galveston, TX
Gina Pugliese, RN, MS • Chicago, IL
William Schaffner, MD • Nashville, TN

ASSOCIATE EDITORS

Ebbing Lautenbach, MD, MPH • Philadelphia, PA
Preeti N. Malani, MD, MSJ • Ann Arbor, MI
David Weber, MD, MPH • Chapel Hill, NC

STATISTICS CONSULTANT

Rodney L. Dunn, MS • Ann Arbor, MI

**SECTION EDITOR FOR GUIDELINES,
POSITION PAPERS, AND INVITED REVIEWS**

Carol Chenoweth, MD • Ann Arbor, MI

MANAGING EDITOR

Gordon Rudy, PhD, ELS • Chicago, IL

PAST EDITORS

Infection Control

Richard P. Wenzel, MD, 1980–1990 (vols. 1–11)

Infection Control and Hospital Epidemiology

Richard P. Wenzel, MD, 1991–1992 (vols. 12 and 13)

Michael D. Decker, MD, 1993–2001 (vols. 14–22)

Barry M. Farr, MD, 2002–2004 (vols. 23–25)

William R. Jarvis, MD, 2005–2006 (vols. 26 and 27)

EDITORIAL ADVISORY BOARD

Miriam Alter, PhD, MD • Atlanta, GA
Lennox Archibald, MD, FRCP • Alachua, FL
Hilary Babcock, MD • St. Louis, MO
Elise M. Beltrami, MD, MPH • Decatur, GA
David Birnbaum, PhD, MPH • Sidney, British Columbia
Christian Brun-Buisson, MD • Creteil, France
John P. Burke, MD • Salt Lake City, UT
David P. Calfee, MD, MS • New York, NY
Yehuda Carmeli, MD, MPH • Tel Aviv, Israel
Sara E. Cosgrove, MD, MS • Baltimore, MD
Donald E. Craven, MD • Burlington, MA
Burke A. Cunha, MD • Mineola, NY
Erika D'Agata, MD, MPH • Boston, MA
Patch Dellinger, MD • Seattle, WA
Daniel Diekema, MD • Iowa City, IA
Charles E. Edmiston, Jr., PhD • Milwaukee, WI
Theodore C. Eickhoff, MD • Denver, CO
Martin S. Favero, PhD • Irvine, CA
Richard A. Garibaldi, MD • Farmington, CT
Petra Gastmeier, MD • Hanover, Germany
Dale N. Gerding, MD • Hines, IL
Donald A. Goldmann, MD • Boston, MA
Anthony D. Harris, MD, MPH • Baltimore, MD
David K. Henderson, MD • Bethesda, MD
Loreen A. Herwaldt, MD • Iowa City, IA
Peter N. R. Heseltine, MD • San Juan, CA
Karen Hoffmann, RN, CIC, MS • Chapel Hill, NC
Janine Jagger, MPH, PhD • Charlottesville, VA
John A. Jernigan, MD, MS • Atlanta, GA
James T. Lee, MD, PhD • St. Paul, MN
L. Clifford McDonald, MD • Atlanta, Georgia
Allison McGeer, MD • Toronto, Ontario
Leonard A. Mermel, DO, ScM • Providence, RI
Robert R. Muder, MD • Pittsburgh, PA
Carlene A. Muto, MD, MS • Pittsburgh, PA
Joseph M. Mylotte, MD, CIC • Buffalo, NY
David L. Paterson, MBBS, FRACP • Pittsburgh, PA
Jan Evans Patterson, MD • San Antonio, TX
Sindy M. Paul, MD • Yardley, PA
David A. Pegues, MD • Los Angeles, CA
Didier Pittet, MD, MS • Geneva, Switzerland
Michael A. Pfaller, MD • Iowa City, IA
Gina Pugliese, RN, MS • Chicago, IL
Isaam Raad, MD • Houston, TX
Jordi Rello, MD, PhD • Tarragona, Spain
Manfred L. Rotter, MD, DipBact • Vienna, Austria
Henning Rüden, MD • Berlin, Germany
William A. Rutala, PhD, MPH • Chapel Hill, NC
Lisa Saiman, MD, MPH • New York, NY
William E. Scheckler, MD • Madison, WI
Lynne M. Sehulster, PhD • Atlanta, GA
John A. Sellick, DO • Amherst, NY
Kent Sepkowitz, MD • New York, NY
Andrew E. Simor, MD • Toronto, Ontario
Philip W. Smith, MD • Omaha, NE
Denis W. Spelman, MD • Prahan, Victoria, Australia
Jeffrey R. Starke, MD • Houston, TX
Janet E. Stout, PhD • Pittsburgh, PA
Clyde Thornsberry, PhD • Franklin, TN
William Trick, MD • Chicago, IL
Antoni Trilla, MD, PhD • Barcelona, Spain
Robert A. Weinstein, MD • Chicago, IL
Andreas Widmer, MD, MS • Basel, Switzerland
Marcus Zervos, MD • Royal Oak, MI

Infection Control and Hospital Epidemiology (ISSN 0899-823X) is published monthly by the University of Chicago Press, 1427 E. 60th St., Chicago, IL 60637-2954 (<http://www.journals.uchicago.edu/ICHE/>). The editorial office is in Chicago, Illinois.

Editorial Office

Communications should be addressed to the Editor, *Infection Control and Hospital Epidemiology*, 1427 E. 60th St., Chicago, IL 60637-2954; (e-mail: iche@press.uchicago.edu; telephone: 773-702-2448, fax: 773-753-4247). Contributors should consult the Information for Authors, which is available at the journal's Web site.

Advertising

Please direct advertising inquiries to Journals Advertising, University of Chicago Press, 1427 E. 60th St., Chicago, IL 60637 (e-mail: thill@press.uchicago.edu; telephone: 773-702-8187; fax: 773-702-0172). Publication of an advertisement in *Infection Control and Hospital Epidemiology* does not imply endorsement of its claims by the Society for Healthcare Epidemiology of America, by the Editor, or by the University of Chicago. Correspondence regarding advertising should be addressed to the advertising office in Chicago.

Permissions

Articles may be copied or otherwise reused without permission only to the extent permitted by Sections 107 and 108 of the US Copyright Law. Permission to copy articles for personal, internal, classroom, or library use may be obtained from the Copyright Clearance Center (<http://www.copyright.com>). For all other uses, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale,

please contact the Permissions Coordinator, Journals Division, University of Chicago Press, 1427 E. 60th St., Chicago, IL 60637 (e-mail: journalpermissions@press.uchicago.edu; fax: 773-834-3489). Articles in the public domain may be used without permission, but it is customary to contact the author.

Subscriptions

Subscription rates for 2008 are \$164 for individuals and \$386 for institutions. Additional rates for non-US subscribers and reduced rates for fellows, residents, and students are available at <http://www.journals.uchicago.edu/ICHE>. Subscription agent for Japan: Kinokuniya Company, Ltd. Individuals have the option to order directly from the University of Chicago Press. Single copy rates: individuals \$17; institutions \$38.

Please direct subscription inquiries, requests for back issues, and address changes to Journals Division, University of Chicago Press, P.O. Box 37005, Chicago, IL 60637 (e-mail: subscriptions@press.uchicago.edu; telephone: 773-753-3347 or toll-free in the United States and Canada 877-705-1878; fax: 773-753-0811 or toll-free 877-705-1879).

Postmaster: Send address changes to *Infection Control and Hospital Epidemiology*, University of Chicago Press, P.O. Box 37005, Chicago, IL 60637-2954.

Periodicals postage paid at Chicago, Illinois, and at an additional mailing office.

Published by the University of Chicago Press, Chicago, Illinois. © 2008 by the Society for Healthcare Epidemiology of America. All rights reserved. This publication is printed on acid-free paper.

fast facts

www.GlobalHealthReporting.org

Search for Information on HIV/AIDS, Tuberculosis and Malaria.

GlobalHealthReporting.org helps researchers, journalists, policy makers and NGOs efficiently sort through the latest and most accurate information on HIV/AIDS, tuberculosis and malaria. The site is updated daily and provides:

- ▶ news summaries of the latest legislative, political, and scientific developments in malaria, TB, HIV/AIDS and global health.
- ▶ reference libraries and the latest information and statistics.
- ▶ new and noteworthy reports, articles and resources.

✉ Sign up for emails to receive summaries of the latest news on global health and a weekly update on new reports, resources and upcoming events. www.GlobalHealthReporting.org/email

GlobalHealthFacts.org

A *new* interactive database providing up-to-date and easy-to-access data by country on HIV/AIDS, TB and malaria and other key health and socio-economic indicators. The data are displayed in tables, charts and color-coded maps and can be downloaded for custom analyses.

www.GlobalHealthFacts.org

GlobalHealthReporting.org is a project operated by the Kaiser Family Foundation with major support from the Bill & Melinda Gates Foundation.

THE HENRY J.
**KAISER
FAMILY
FOUNDATION**



**GlobalHealth
Reporting.org**

The Kaiser Family Foundation is a non-profit, private operating foundation dedicated to providing information and analysis on health care issues to policymakers, the media, the health care community, and the general public. The Foundation is not associated with Kaiser Permanente or Kaiser Industries.

Step 1: Apply Chlorascrub.™ *

Step 2: There is no step 2.

At Professional Disposables International, Inc.(PDI), we believe quality should be efficacy and efficiency. We designed Chlorascrub™ to deliver both.

It's the first and only FDA approved Chlorhexidine 3.15%(w/v) with Isopropyl Alcohol 70%(v/v) combination skin antiseptic. A smart alternative to complicated and messy skin preps.

Finally, time-saving ease and convenience meets clinically proven efficacy.

PDI. Caring more about healthcare.



Take the next step.

**Call 1-800-999-6423 to learn more
or visit pdipdi.com**

**See product for complete directions for use.*

**Preventing
Infections
Together**



© 2008 Professional Disposables International, Inc.
ISO 9001:2000 Certified

Chlorascrub™ is a trademark of Professional Disposables International, Inc.
Chlorascrub™ is under license by American Solumed, Inc.