## INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 28. NUMBER 10

OCTOBER 2007

### SHEA GUIDELINE

Raising Standards While Watching the Bottom Line: Making a Business Case for Infection Control • Eli N. Perencevich, MD, MS; Patricia W. Stone, PhD, MPH, RN; Sharon B. Wright, MD, MPH; Yehuda Carmeli, MD, MPH; David N. Fisman, MD, MPH, FRCP(C); Sara E. Cosgrove, MD, MS

### ORIGINAL ARTICLES

- 1134 Real-Time Polymerase Chain Reaction Detection of Methicillin-Resistant Staphylococcus aureus:
  Impact on Nosocomial Transmission and Costs L. O. Conterno, PhD; J. Shymanski, BScN; K. Ramotar, PhD;
  B. Toye, MD; C. van Walraven, MD; D. Coyle, PhD; V. R. Roth, MD
- Widespread Environmental Contamination Associated With Patients With Diarrhea and Methicillin-Resistant Staphylococcus aureus Colonization of the Gastrointestinal Tract • John M. Boyce, MD; Nancy L. Havill, MT; Jonathan A. Otter, BSc; Nicholas M. T. Adams, BSc
- Preventing the Airborne Spread of Staphylococcus aureus by Persons With the Common Cold: Effect of Surgical Scrubs, Gowns, and Masks Werner E. Bischoff, MD, PhD; Brian K. Tucker, BS; Michelle L. Wallis, BS; Beth A. Reboussin, PhD; Michael A. Pfaller, MD; Frederick G. Hayden, MD; Robert J. Sherertz, MD
- Selective Use of Intranasal Mupirocin and Chlorhexidine Bathing and the Incidence of Methicillin-Resistant Staphylococcus aureus Colonization and Infection Among Intensive Care Unit Patients • Glenn Ridenour, MD; Russell Lampen, DO; Jeff Federspiel; Steve Kritchevsky, PhD; Edward Wong, MD; Michael Climo, MD
- An Alternative Scoring System to Predict Risk for Surgical Site Infection Complicating Coronary Artery Bypass Graft Surgery N. Deborah Friedman, MBBS, FRACP; Ann L. Bull, PhD; Philip L. Russo, MclinEpid; Karin Leder, MBBS, FRACP, MPH; Christopher Reid, PhD; Baki Billah, PhD; Silvana Marasco, MBBS, MS, FRACS; Emma McBryde, MBBS; Michael J. Richards, MBBS, FRACP, MD
- Surgical Site Infection After Surgery to Repair Femoral Neck Fracture: A French Multicenter Retrospective Study Jacques Merrer, MD; Emmanuelle Girou, PharmD; Alain Lortat-Jacob, MD; Philippe Montravers, MD; Jean-Christophe Lucet, MD; Groupe de Recherche sur l'Antibioprophylaxie en Chirurgie
- 1175 Risk Factors for and Impact of Infection or Colonization With Aztreonam-Resistant *Pseudomonas* aeruginosa Leanne B. Gasink, MD; Neil O. Fishman, MD; Irving Nachamkin, DrPH, MPH; Warren B. Bilker, PhD; Ebbing Lautenbach, MD, MPH, MSCE
- Decreasing Airborne Contamination Levels in High-Risk Hospital Areas Using a Novel Mobile Air-Treatment Unit V. Bergeron, PhD; G. Reboux, PhD; J. L. Poirot, MD; N. Laudinet, BS
- 1187 Meningitis Following Spinal Anesthesia: 6 Cases in 5 Years Lisa Rubin, MD, MPH; Hannah Sprecher, PhD; Ahmed Kabaha, MD; Gabriel Weber, MD; Nava Teitler, MA; Shmuel Rishpon, MD
- Impact of a Single Plain Finger Ring on the Bacterial Load on the Hands of Healthcare Workers Mette Fagernes, RN, Cand.san; Egil Lingaas, MD, PhD; Per Bjark, MD

CONTENTS CONTINUED INSIDE



THE OFFICIAL JOURNAL OF THE SOCIETY FOR HEALTHCARE EPIDEMIOLOGY OF AMERICA

Hands and germs hang out in the same places.
Especially in your hospital.

Nebsela Preunonia

Nebsela Preunonia

Nebsela Preunonia

Nebsela Preunonia

Hands are the first, and last, lines of defense against the spread of pathogens. It's not a job for just any antiseptic. The CDC advises that alcohol alone is not appropriate when hands are visibly dirty or contaminated with proteinaceous materials.<sup>1</sup>

### Compare washing with Hibiclens to using other antiseptic solutions like alcohol, iodine and PCMX:

- Broad-spectrum residual action lasts up to 6 hours after washing.<sup>2</sup>
- Efficacy is **not** compromised by contact with organic matter like blood.<sup>3</sup>
- Proprietary formulation is gentler on your skin.4
- For 34 years, the standard by which all others are compared.
- Removes dirt and debris leaving hands clean.
- With Hibiclens as your first, and last, wash of the day, you'll have one less thing to worry about.

### Kill the Hibigeebies with

Hidigeedie Escherichia Coli

Antimicrobial Antiseptic Skin Cleanser

HIBICLERS



Guideline for Hand Hygiene in Health-Care Settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force October 25, 2002 (Vol. 51 / No. RR-16. Accessed at: http://www.cdc.gov/mmw/PDF/rr/r5116 pdf on 18 September 2005. "Regent Medical Study #030917-150." Independent Lab Test Time-Kill Study 5 Minutes S. epidermidis ATCC #12228. Protocol #040907-150. "PRACS Toport #R05-0225 and R05-0971. Hibiciens, Hibigeheits, the Hibiciens joint goard Mibinyles are registered trademarks of Mölnlycke Group of companies. Distributed by Mölnlycke Health Care US, LLC, Norcross, Georgia 30092. © 2006 Regent Medical Limited. All rights reserved. 1 800.843.8497 www.hibigeebles.com

### INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 28, NUMBER 10

OCTOBER 2007

CONTENTS CONTINUED FROM COVER

Surveillance of Occupational Blood and Body Fluid Exposures Among French Healthcare Workers in 2004 • A. G. Venier, MD; A. Vincent, MD; F. L'Hériteau, MD; N. Floret, MD, PhD; H. Sénéchal, PharmD; D. Abiteboul, MD; E. Reyreaud; B. Coignard, MD; P. Parneix, MD

### CONCISE COMMUNICATIONS

- Role of Acid-Suppressing Medications During a Sustained Outbreak of Salmonella Enteritidis Infection in a Long-Term Care Facility Anna Bowen, MD; Alexandra Newman, DVM; Concepcion Estivariz, MD; Norene Gilbertson, RN; John Archer, MS; Arjun Srinivasan, MD; Michael Lynch, MD; John Painter, DVM
- **Emergence of Staphylococcal Cassette Chromosome** *mec* **Type IV Methicillin-Resistant** *Staphylococcus aureus* **as a Cause of Ventilator-Associated Pneumonia** D. Neofytos, MD; B. Kuhn; S. Shen, MD; X. Hua Zhu, MD; D. Jungkind, PhD; P. Flomenberg, MD
- Interhospital Comparisons of Coronary Artery Bypass Graft Surgical Site Infection Rates Differ if Donor Sites Are Excluded P. L. Russo, MclinEpid; L. Gurrin, PhD; N. D. Friedman, MBBS, FRACP; A. L. Bull, PhD; S. Marasco, MBBS, FRACS; H. Kelly, MBBS, MPH, FAFPHM; C. J. Boardman, MPH; M. J. Richards, MBBS, FRACP
- Outbreak of Acinetobacter baumannii Bacteremia Related to Contaminated Morphine Used for Patient-Controlled Analgesia Hsin-Chun Lee, MD; Nan-Yao Lee, MD; Chia-Ming Chang, MD; Cheng-Yang Chou, MD; Yi-Hui Wu, RN, MPH; Li-Rong Wang, BS; Nai-Ying Ko, RN, PhD; Ching-Chuan Liu, MD, MPH; Wen-Chien Ko, MD

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 East 60th St., Chicago, IL 60637-2954 (http://www.journals.uchicago.edu/ICHE/). The editorial offices are 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

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 business office in Chicago (see above).

### Permissions

Articles may be copied or otherwise reused without permission only to the extent permitted by Sections 107 and 108 of the U.S. Copyright Law. Permission to copy articles for personal, internal, classroom, or library use may be obtained from the Copyright Clearance Center (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 Permissions Coordinator, Journals Division, University of Chicago Press, 1427 E.

60th St., Chicago, IL 60637 USA. Fax: 773-834-3489. E-mail: journalpermissions@press .uchicago.edu. 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 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 inquries, back-issue requests, and address changes to The University of Chicago Press, Journals Division, P.O. Box 37005, Chicago, IL 60637. 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. E-mail: subscriptions@press.uchicago.edu.

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, IL. © 2007 by The Society for Healthcare Epidemiology of America. All rights reserved. This publication is printed on acid-free paper.

## INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY



### IMPROVE THE QUALITY OF YOUR RESEARCH TIME

### Activate your online subscription

Take advantage of online-only features and improve the quality of your research time. Search articles, authors, and terms. Two more online services to increase your productivity:

### **@-TOC** Alerts

e-TOC alerts deliver links to new content via e-mail as soon as each issue is available online. Abstracts and free-access articles are available to subscribers and nonsubscribers; regular full-text articles are available to subscribers and subscribing institutions.

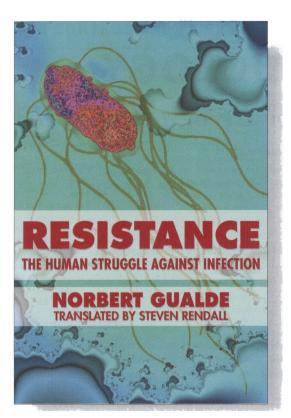
### RSS RSS Feeds

RSS (Really Simple Syndication) is a free, easy, and automatic way to inform you when new journal articles are published. Instead of visiting a journal Web site for new articles, let RSS tell you the moment new articles are posted! Sign up today!



Despite its diminutive size the MicroCLAVE Neutral Connector can be one of your most powerful allies in the fight against catheter-related bloodstream infections. Neutral displacement and the ability to eliminate heparin flushing promotes better patient outcomes.





### Resistance

The Human Struggle against Infection Norbert Gualde Translated by Steven Rendall

"Resistance provides a detailed and accurate analysis of the critical factors that determine the outcome of this continuous battle, with an emphasis on the evolutionary protection provided by our immune system." —Baruj Benacerraf, MD, Nobel Laureate in Physiology or Medicine, 1980

"Resistance sparkles with wit and intelligence, and is a treasure trove of historical facts. . . . It also serves as starting point for serious contemplation of present and future perils."—James S. Goodwin, MD, Director, Sealy Center on Aging Cloth \$25.00

# from DANA PRESS

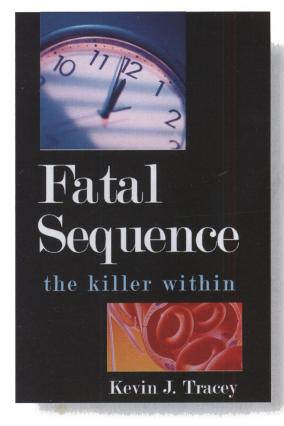
### Now in Paperback **Fatal Sequence**

The Killer Within Kevin J. Tracey

"I enjoyed reading Fatal Sequence very much; indeed, I had great difficulty putting it down.... Tracey is among the giants in sepsis research. ... I recommend Fatal Sequence to all involved in the care of patients with sepsis and to patients' families." —Robert F. Wilson, Journal of the American Medical Association

"Here is the inside scoop on the discovery of tumor necrosis factor and high mobility group proteins, with an ever-convincing argument for the cytokine theory of disease." —Jerry J. Zimmerman, Critical Care Medicine

Paper \$12.95



Distributed by the University of Chicago Press www.press.uchicago.edu