

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 27, NUMBER 1

JANUARY 2006

EDITORIALS

- 1 **Infection Control and Hospital Epidemiology: Transitioning Through Adolescence!** • William R. Jarvis, MD
3 **Lost in Translation** • Nasia Safdar, MD; Dennis G. Maki, MD

ORIGINAL ARTICLES

- 8 **Preventing Catheter-Associated Bloodstream Infections: A Survey of Policies for Insertion and Care of Central Venous Catheters From Hospitals in the Prevention Epicenter Program** • David K. Warren, MD; Deborah S. Yokoe, MD; Michael W. Climo, MD; Loreen A. Herwaldt, MD; Gary A. Noskin, MD; Gianna Zuccotti, MD; Jerome I. Tokars, MD; Trish M. Perl, MD; Victoria J. Fraser, MD
- 14 **Comparing Bloodstream Infection Rates: The Effect of Indicator Specifications in the Evaluation of Processes and Indicators in Infection Control (EPIC) Study** • Barbara I. Braun, PhD; Stephen B. Kritchevsky, PhD; Linda Kusek, RN, MPH; Edward S. Wong, MD; Steven L. Solomon, MD; Lynn Steele, MS, CIC; Cheryl L. Richards, BS; Robert P. Gaynes, MD; Bryan Simmons, MD; Evaluation of Processes and Indicators in Infection Control (EPIC) Study Group
- 23 **Disinfection of Needleless Catheter Connectors and Access Ports with Alcohol May Not Prevent Microbial Entry: The Promise of a Novel Antiseptic-Barrier Cap** • Steve Z. Menyhay, RN, BSN; Dennis G. Maki, MD
- 28 **Risk Factors and Outcomes Associated With Non-*Enterococcus faecalis*, Non-*Enterococcus faecium* Enterococcal Bacteremia** • Marie A. de Perio, MD; Paul R. Yarnold, PhD; John Warren, MD; Gary A. Noskin, MD
- 34 **Risk Factors for Groin Wound Infection After Femoral Artery Catheterization: A Case-Control Study** • Philip M. Polgreen, MD; Daniel J. Diekema, MD; Jeff VandeBerg, MS; R. Todd Wiblin, MD; Yi Yi Chen, MS; Sherry David, RN, BS; Dianne Rasmus, RN; Nicole Gerdt, RN; Angelena Ross, RN; Louis Katz, MD; Loreen A. Herwaldt, MD
- 38 **A Prospective Trial of a Novel, Silicone-Based, Silver-Coated Foley Catheter for the Prevention of Nosocomial Urinary Tract Infections** • Arjun Srinivasan, MD; Tobi Karchmer, MD, MS; Ann Richards, BS; Xiaoyan Song, MD; Trish M. Perl, MD, MSc
- 44 **Fungal Contamination in Hospital Environments** • F. Perdelli, PhD; M. L. Cristina, PhD; M. Sartini, PhD; A. M. Spagnolo, BScD; M. Dallera, BScD; G. Ottria, BScD; R. Lombardi, PhD; M. Grimaldi, BScD; P. Orlando, PhD
- 48 **Knowledge About HIV Infection and Attitude of Nursing Staff Toward Patients With AIDS in Iran** • Mehrdad Askarian, MD, MPH; Zohreh Hashemi, MD, MPH; Peyman Jaafari, MSc; Ojan Assadian, MD, DTM&H
- 54 **Nosocomial Infection Surveillance in a Surgical Intensive Care Unit in Spain, 1996-2000: A Time-Trend Analysis** • Máxima Lizán-García, MD, PhD; Ramón Peyro, MD; Manuel Cortiña, MD; María Dolores Crespo, MD, PhD; Aurelio Tobias, MSc, CStat
- 60 **Impact of an Infection Control Program in an Intensive Care Unit in France** • Régis Verdier, MD; Sylvie Parer, MD; Hélène Jean-Pierre, MD; Pierre Dujols, MD, PhD; Marie-Christine Picot, MD, PhD

CONTENTS CONTINUED INSIDE



THE OFFICIAL JOURNAL OF THE SOCIETY FOR HEALTHCARE EPIDEMIOLOGY OF AMERICA
PUBLISHED FOR THE SOCIETY BY THE UNIVERSITY OF CHICAGO PRESS

An Official Publication of the Society for Healthcare Epidemiology of America

EDITOR

William R. Jarvis, MD • Hilton Head, SC

DEPUTY EDITOR

David P. Calfee, MD, MS • New York, NY

ASSISTANT EDITOR

Preeti N. Malani, MD, MSJ • 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

Donald A. Goldmann, MD • Boston, MA
Didier Pittet, MD, MS • Geneva, Switzerland
Andreas Widmer, MD, MS • Basel, Switzerland

SECTION EDITORS

Beyond Infection Control: The New Hospital Epidemiology

Wing Hong Seto, MD • Hong Kong

Disinfection and Sterilization

William A. Rutala, PhD, MPH • Chapel Hill, NC

From the Laboratory

Marcus Zervos, MD • Royal Oak, MI

Infections in Immunocompromised Patients

Kent Sepkowitz, MD • New York, NY

Information Management

John A. Sellick, DO • Amherst, NY

Issues in Surgery

James T. Lee, MD, PhD • St. Paul, MN

Medical News

Gina Pugliese, RN, MS • Chicago, IL
Martin S. Favero, PhD • Irvine, CA

Practical Healthcare Epidemiology

Loreen A. Herwaldt, MD • Iowa City, IA

Statistics for Hospital Epidemiology

David Birnbaum, PhD, MPH • Sidney, British Columbia

Topics in Long-Term Care

Philip W. Smith, MD • Omaha, NE

Topics in Occupational Medicine

David Weber, MD, MPH • Chapel Hill, NC

MANAGING EDITOR

Gordon Rudy, PhD, ELS • Chicago, IL

EDITORIAL ADVISORY BOARD

J. Wesley Alexander, MD • Cincinnati, OH
Miriam Alter, PhD, MD • Atlanta, GA
Hilary Babcock, MD • St. Louis, MO
Elise M. Beltrami, MD, MPH • Decatur, GA
Richard E. Besser, MD • Atlanta, GA
Marc J. M. Bonten, MD, PhD • Utrecht, The Netherlands
John M. Boyce, MD • New Haven, CT
Christian Brun-Buisson, MD • Creteil, France
John P. Burke, MD • Salt Lake City, UT
Yehuda Carmeli, MD, MPH • Tel Aviv, Israel
Carol Chenoweth, MD • Ann Arbor, MI
Sara E. Cosgrove, MD, MS • Baltimore, MD
Donald E. Craven, MD • Burlington, MA
Erika D'Agata, MD, MPH • Boston, MA
Franz Daschner, MD • Freiburg, Germany
Patch Dellinger, MD • Seattle, WA
Charles E. Edmiston, Jr., PhD • Milwaukee, WI
Theodore C. Eickhoff, MD • Denver, CO
Jean Yves Fagon, MD, MPH • Paris, France
Mark Farrington, MA, FRCPath • Cambridge, UK
Victoria J. Fraser, MD • St. Louis, MO
Richard A. Garibaldi, MD • Farmington, CT
Petra Gastmeier, MD • Hanover, Germany
Dale N. Gerding, MD • Hines, IL
Stephan Harbarth, MD, MS • Geneva, Switzerland
Anthony D. Harris, MD, MPH • Baltimore, MD
David K. Henderson, MD • Bethesda, MD
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
Jacob L. Kool, MD, PhD • Fort Collins, CO
Ebbing Lautenbach, MD, MPH • Philadelphia, PA
Allison McGeer, MD • Toronto, Ontario
John E. McGowan, Jr., MD • Atlanta, GA
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
Lindsay Nicolle, MD • Winnipeg, Manitoba
Juhani Ojajarvi, MD • Helsinki, Finland
Michael T. Osterholm, PhD, MPH • Minneapolis, MN
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
Michael A. Pfaller, MD • Iowa City, IA
Samuel Raad de Leon, MD, MSc • Mexico City
Isaam Rance, MD • Houston, TX
Jordi Rello, MD, PhD • Tarragona, Spain
Manfred L. Rotter, MD, DipBact • Vienna, Austria
Henning Rüden, MD • Berlin, Germany
Lisa Saiman, MD, MPH • New York, NY
Syed A. Sattar, PhD • Ottawa, Ontario
William E. Scheckler, MD • Madison, WI
Lynne M. Sehulster, PhD • Atlanta, GA
Andrew E. Simor, MD • Toronto, Ontario
Denis W. Spelman, MD • Prahan, Victoria, Australia
Susan Springthorpe, MSc • Ottawa, Ontario
Jeffrey R. Starke, MD • Houston, TX
Janet E. Stout, PhD • Pittsburgh, PA
Michael L. Tapper, MD • New York, NY
Clyde Thornsberry, PhD • Franklin, TN
Jerome Tokars, MD, PhD • Atlanta, GA
Timothy R. Townsend, MD • Baltimore, MD
Antoni Trilla, MD, PhD • Barcelona, Spain
Robert A. Weinstein, MD • Chicago, IL
Sergio B. Wey, MD • São Paulo, Brazil

Infection Control and Hospital Epidemiology (ISSN 0195-9417) 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 *ICHE* Web site.

Subscriptions

Subscription orders and correspondence should be addressed to the University of Chicago Press, P.O. Box 37005, Chicago, IL 60637-2954. Checks should be made out to the University of Chicago Press. All orders must be in US currency. Telephone: (8:00 A.M.–5:00 P.M. Central Standard Time, Monday–Friday) US and Canada toll free, (877) 705-1878; Rest of World, (773) 753-3347. Fax: US and Canada toll free, (877) 705-1879; Rest of World, (773) 753-0811. E-mail: subscriptions@press.uchicago.edu; Web site: http://www.journals.uchicago.edu.

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

The copyright code on the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made only for personal or internal use or for the personal or internal use of specific clients and provided that the copier pays the

stated per-copy fee through the Copyright Clearance Center (CCC), 222 Rosewood Dr., Danvers, MA 01923. To request permission for other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, please write to the Permissions Department, University of Chicago Press, 1427 East 60th St., Chicago, IL 60637-2954. For articles in the public domain, permission to reprint should be obtained from the author.

Subscription rates (1 year) for *Infection Control and Hospital Epidemiology* (ICHE):

	Domestic	Foreign With Air Freight	Canadian
Institutions	350.00	399.00	389.50
Individuals	150.00	199.00	175.50
Fellows	55.00	104.00	73.85

Note: All rates in US dollars. All new subscriptions will begin with the January issue. All rates include postage. Canadian rates include 7% GST. *ICHE* single copies: institutions, \$30.00; individuals, \$14.00. Japanese subscription agent: Kinokuniya Company Ltd.

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. © 2006 by The Society for Healthcare Epidemiology of America. All rights reserved. This publication is printed on acid-free paper.

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 27, NUMBER 1

JANUARY 2006

CONTENTS CONTINUED FROM COVER

CONCISE COMMUNICATIONS

- 67 **Increased Catheter-Related Bloodstream Infection Rates After the Introduction of a New Mechanical Valve Intravenous Access Port** • Lisa L. Maragakis, MD; Karen L. Bradley, RN, BSN; Xiaoyan Song, MD, MS; Claire Beers, RN, MSN; Marlene R. Miller, MD, MSc; Sara E. Cosgrove, MD, MS; Trish M. Perl, MD, MSc
- 70 **Determining the Significance of Coagulase-Negative Staphylococci Identified in Cultures of Paired Blood Specimens from Neonates by Species Identification and Strain Clonality** • Yhu-Chering Huang, MD, PhD; Ying-Hsiang Wang, MD; Lin-Hui Su, MS; Yi-Hong Chou, MD; Rey-In Lien, MD; Tzou-Yien Lin, MD
- 73 **Predisposing, Reinforcing, and Enabling Factors Influencing Influenza Vaccination Acceptance Among Healthcare Workers** • Daniel Bautista, MD, PhD; Bernardo Vila, MD; Ruth Usó, MD; María Téllez, MD; Vicente Zanón, MD
- 77 **Increased Influenza Vaccination of Healthcare Workers at a Pediatric Cancer Hospital: Results of a Comprehensive Influenza Vaccination Campaign** • Jonathan A. McCullers, MD; Kathleen M. Speck, BS; Bonnie F. Williams, RN, CIC; Hua Liang, PhD; Joseph Mirro, Jr., MD
- 79 **An Outbreak of *Serratia marcescens* Bloodstream Infections Associated With Misuse of Drug Vials in a Surgical Ward** • Angelo Pan, MD; Lucia Dolcetti, MD; Catia Barosi, PhD; Patrizia Catenazzi, RN; Tomaso Ceruti, PhD; Lucio Ferrari, PhD; Silvia Magri, MD; Eugenia Quiros Roldan, MD; Laura Soavi, MD; Giuseppe Carnevale, MD
- 83 ***Staphylococcus aureus* Bloodstream Infection After Cardiac Surgery: Risk Factors and Outcome** • Christian Olsson, MD; Ann Tammelin, MD, PhD; Stefan Thelin, MD, PhD
- 85 **Surgical Site Infection During Hospitalization and After Discharge in Patients Who Have Undergone Cardiac Surgery** • Marta Fernández-Ayala, MD; Daniel N. Nan, MD; Concepción Fariñas-Álvarez, MD, PhD; José M. Revuelta, MD, PhD; Jesús González-Macías, MD, PhD; M. Carmen Fariñas, MD, PhD
- 89 **Follow-up and Management of Patients Exposed to a Flawed Automated Endoscope Washer-Disinfector in a Digestive Diseases Unit** • Philippe Vanhems, MD, PhD; Angèle Gayet-Ageron, MD; Thierry Ponchon, MD, PhD; Claude Bernet, MD; Jean-Alain Chayvialle, MD, PhD; Christine Chemorin, RN; Léone Morandat, RN; Marie-Ange Bibollet, RN; Philippe Chevallier, MD, PhD; Jacques Ritter, MD, PhD; Jacques Fabry, MD
- 92 **An Outbreak of Pertussis in a Hematology-Oncology Care Unit: Implications for Adult Vaccination Policy** • Brian R. Boulay, MD; Carolyn J. Murray, MD, MPH; Judy Ptak, RN; Kathryn B. Kirkland, MD; Jose Montero, MD; Elizabeth A. Talbot, MD
- 95 **Low Prevalence of Pertussis Among Children Admitted With Respiratory Symptoms During Respiratory Syncytial Virus Season** • George K. Siberry, MD, MPH; Nicholas R. Paquette, BS; Tracy L. Ross, BS; Trish M Perl, MD, MSc; Alexandra Valsamakis, MD, PhD

LETTERS TO THE EDITOR

- 98 **Influenza Vaccination Rates, Feedback, and the Hawthorne Effect** • Philip M. Polgreen, MD; Jean Pottinger, MA; Linnea A. Polgreen, PhD; Daniel J. Diekema, MD; Loreen A. Herwaldt, MD
- 99 **Prevalence of Needlestick Injuries Among Medical Students at a University in Iran** • Mehrdad Askarian, MD, MPH; Leila Malekmakan, MD, MPH; Mary-Louise McLaws, DPHTM, MPH, PhD; Najaf Zare, PhD; J. Megan M. Patterson, MD

CONTENTS CONTINUED ON NEXT PAGE

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 27, NUMBER 1

JANUARY 2006

CONTENTS CONTINUED FROM PREVIOUS PAGE

- 101 **Effectiveness of Hepatitis B Vaccination** • Shoichi Inaba; Akira Ito; Yoshihisa Miyata; Kenji Tadokoro; Shu Kikuchi
- 102 **Prevalence of and Risk Factors for Colonization With Vancomycin-Resistant Enterococcus Among Human Immunodeficiency Virus-Positive Outpatients** • Chad Achenbach, MD, MPH; E. Flores, MT; P. Ferrell, RN; D. Pitrak, MD; S. G. Weber, MD, MS
- 104 **Colonization by Antibiotic-Resistant Gram-Negative Bacteria and Appropriate Empirical Antibiotic Therapy in Intensive Care Unit Patients** • Fernando Bellissimo-Rodrigues, MD, MS; José Fernando de Castro Figueiredo, MD, PhD; Roberto Martinez, MD, PhD
- 105 **Reply to Bellissimo-Rodrigues et al.** • Stijn Blot, PhD
- 106 **Information for Authors**

Detects The
Epidemic Strain¹

6 months ago it was revolutionary.
Now, more than 600 labs
call it the benchmark.



Peer reviewed – laboratory adopted.

Lead Author	Institution	Sample #	Sensitivity	Correlation
K.J. Brown	Mayo Clinic	210	100.00%	98.57%
E.L. Chan	Baptist Medical Center	183	100.00%	98.77%
C.A. Gleaves	Providence Portland M.C.	314	93.50%	95.41%
G.L. Sliwinski	Meridian Bioscience, Inc.	200	100.00%	99.00%
G.L. Sliwinski	Meridian Bioscience, Inc.	400	97.70%	99.25%

* ASM 105th General Meeting Poster Data, Atlanta, Georgia, June 2005

Ordering Information	Kit Size	Catalog No.
ImmunoCard® Toxins A & B	50 Cards	712050

Other Meridian Products	Kit Size	Catalog No.
Premier® Toxins A & B	96 Wells	616096

Meridian is the *C. difficile* testing expert.

It's no surprise that Meridian created the benchmark test for easily and quickly detecting toxins A and B. In fact, Meridian offers five *C. difficile* tests – the largest selection in the industry – making us the expert in *C. difficile* testing. That's inspired science – and that's why our test continues to be faster and more accurate than the closest competitor. So when you want trusted solutions, talk to your Meridian *C. difficile* specialist at 1-888-763-6769. They're part of the most educated and reliable sales team in the industry.

Meridian
Bioscience, Inc.
Inspired Science. Trusted Solutions.™

¹Characterized as North American pulsed-field type 1, toxinotype III, restriction enzyme analysis type BI by McDonald LC, Killgore, GE, Thompson A, et al. Emergence of an epidemic, toxin gene variant strain of *Clostridium difficile* responsible for outbreaks in the United States between 2000 and 2004. N Engl J Med, 2005. Data on file at Meridian Bioscience, Inc.
USA/Corporate Office 3471 River Hills Drive Cincinnati, Ohio 45244 Telephone: 513.271.3700
Orders / Customer Service: 1.800.543.1980 Technical Support: 1.800.343.3858
Information Fax: 513.272.5432 Ordering Fax: 513.271.0124
C. difficile Specialist: 1.888.763.6769 www.meridianbioscience.com
ImmunoCard® Toxins A & B U.S. Patent 5,006,474

Belgium / France / Italy / The Netherlands

©2006



The Society for Healthcare Epidemiology of America
(SHEA) announces a new
publisher for its official journal,

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY (ICHE)

SHEA and the University of Chicago Press are pleased to inaugurate a publishing alliance that will bring greater visibility to the journal's presentation of important research in healthcare epidemiology and infection control.

Immediate benefits of the new partnership, which begins with the January 2006 issue, are

- Rapid release of articles in HTML and PDF format
- HTML links from the tables of contents
- Online-only features such as links to Pub Med, the *Journal of Infectious Diseases* and *Clinical Infectious Diseases*
- Full text searchability
- E-mail tables of contents notification with electronic links to the articles

THE UNIVERSITY OF CHICAGO PRESS

