

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 32, NUMBER 5

MAY 2011

ORIGINAL ARTICLES

- 415 Patient-Care Practices Associated with an Increased Prevalence of Hepatitis C Virus Infection among Chronic Hemodialysis Patients** • Gayle Shimokura, PhD; Feng Chai, PhD; David J. Weber, MD, MPH; Gregory P. Samsa, PhD; Guo-liang Xia, MD; Omana V. Nainan, PhD; Leslie H. Tobler, PhD; Michael P. Busch, MD, PhD; Miriam J. Alter, PhD, MPH
- 425 Does a Little Bit Really Go a Long Way? Infection Prevention in Ambulatory Healthcare Facilities** • David K. Henderson, MD
- 428 Current Strategies for Managing Providers Infected with Bloodborne Pathogens** • Sarah Turkel, MS, MPH; David K. Henderson, MD
- 435 Pandemic (H1N1) 2009 Influenza in Hospitalized Children in Manitoba: Nosocomial Transmission and Lessons Learned from the First Wave** • Sergio T. Fanella, MD, DTM&H; Michelle A. Pinto, MD; Natalie A. Bridger, MD; Jared M. P. Bullard, MD; Jennifer M. L. Coombs, MD; Maryanne E. Crockett, MD, MPH, DTM&H; Karen L. Olekson, RN; Philippe G. Poliquin, MD; Paul G. Van Caeseele, MD; Joanne E. Embree, MD
- 444 Seasonal Influenza Vaccination of Healthcare Employees: Results of a 4-Year Campaign** • Pamela Hirsch, NP-C, MEd, MS; Michael Hodgson, MD, MPH; Victoria Davey, PhD, MPH, RN
- 449 Perceptions and Influence of a Hospital Influenza Vaccination Policy** • Elizabeth L. Daugherty, MD, MPH; Kathleen A. Speck, MPH; Cynthia S. Rand, PhD; Trish M. Perl, MD, MSc
- 456 Dynamic Epidemic Model for Influenza with Clinical Complications** • Sen-Te Wang, MD, PhD; Li-Sheng Chen, PhD; Long-Teng Lee, MD, PhD; Hsiu-Hsi Chen, PhD
- 465 Economic Value of Dispensing Home-Based Preoperative Chlorhexidine Bathing Cloths to Prevent Surgical Site Infection** • Rachel R. Bailey, PhD, MPH; Dianna R. Stuckey; Bryan A. Norman, PhD; Andrew P. Duggan; Kristina M. Bacon, MPH; Diana L. Connor, MPH; Ingi Lee, MD, MSCE; Robert R. Muder, MD; Bruce Y. Lee, MD, MBA
- 472 Deriving Measures of Intensive Care Unit Antimicrobial Use from Computerized Pharmacy Data: Methods, Validation, and Overcoming Barriers** • David N. Schwartz, MD; R. Scott Evans, MS, PhD; Bernard C. Camins, MD, MSCR; Yosef M. Khan, MD, MPH; James F. Lloyd, BS; Nadine Shehab, PharmD, MPH; Kurt Stevenson, MD, MPH, for the Centers for Disease Control and Prevention Epicenter Program
- 481 Systematic Review of Measurement and Adjustment for Colonization Pressure in Studies of Methicillin-Resistant *Staphylococcus aureus*, Vancomycin-Resistant Enterococci, and *Clostridium difficile* Acquisition** • Adebola O. Ajao, MPH; Anthony D. Harris, MD, MPH; Mary-Claire Roghmann, MD, MS; J. Kristie Johnson, PhD; Min Zhan, PhD; Jessina C. McGregor, PhD; Jon P. Furuno, PhD
- 490 Molecular Epidemiology and Risk Factors for Colonization by Vancomycin-Resistant *Enterococcus* in Patients with Hematologic Malignancies** • N. G. Almyroudis, MD; A. J. Lesse, MD; T. Hahn, PhD; G. Samonis, MD; P. A. Hazamy, RN; K. Wongkittiroch, MD; E. S. Wang, MD; P. L. McCarthy Jr., MD; M. Wetzler, MD; B. H. Segal, MD



THE OFFICIAL JOURNAL OF THE SOCIETY FOR HEALTHCARE EPIDEMIOLOGY OF AMERICA

CONTENTS CONTINUED INSIDE

THE UNIVERSITY OF CHICAGO PRESS

A stitch in time saves.

BD Protect™ **Infection Prevention**

provides critical HAI-related information when time matters most.

24/7 surveillance provides alerts and reports to help you

- make treatment and isolation decisions faster
- respond more quickly to unfolding infection-related events
- identify new MDROs to reduce risk of transmission

On demand reports support your quality improvement goals

- analyze trends, create reports and graphs
- investigate outbreaks
- track process compliance

NHSN-compliant tools electronically

- collect and validate denominator and HAI data
- benchmark and report to NHSN



Helping all people
live healthy lives

Designed by CDC-trained epidemiologists and grounded in over 25 years of infection surveillance software experience, **BD Protect Infection Prevention has the flexibility to support your unique infection prevention goals.**

To learn more, visit us on the web at www.bd.com/ds/BDProtect, email us at BDProtect@bd.com, or call us at **800.426.8015**.

BD Diagnostics
800.426.8015
www.bd.com/ds/BDProtect

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

VOLUME 32, NUMBER 5

MAY 2011

CONTENTS CONTINUED FROM COVER

- 497 Predictors of Rectal Carriage of Carbapenem-Resistant Enterobacteriaceae (CRE) among Patients with Known CRE Carriage at Their Next Hospital Encounter** • Vered Schechner, MD; Tali Kotlovsky, BSc, MHA; Jalal Tarabeia, RN, PhD; Meital Kazma, MSc; David Schwartz, PhD; Shiri Navon-Venezia, PhD; Yehuda Carmeli, MD, MPH

CONCISE COMMUNICATIONS

- 504 Evaluation of an Infrared Thermal Detection System for Fever Recognition during the H1N1 Influenza Pandemic** • Angela L. Hewlett, MD, MS; Andre C. Kalil, MD; Rahman A. Strum, MPA; Wesley G. Zeger, DO; Philip W. Smith, MD
- 507 Evaluation of ATP Bioluminescence Assays for Potential Use in a Hospital Setting** • Zoie A. Aiken, MSc; Michael Wilson, DSc; Jonathan Pratten, PhD
- 510 Use of Nested Polymerase Chain Reaction Based on Sequence-Based Typing of Clinical Samples to Determine the Source of Infection for Hospital-Acquired Legionnaires' Disease** • Maria Scaturro, PhD; Stefano Fontana, PhD; Maria Luisa Ricci, BSBS
- 513 *Clostridium difficile* Infection in a Department of Veterans Affairs Long-Term Care Facility** • Dubert M. Guerrero, MD; Michelle M. Nerandzic, BS; Lucy A. Jury, NP; Shelley Chang, PhD; Robin L. Jump, MD, PhD; Curtis J. Donskey, MD

RESEARCH BRIEF

- 516 Transmission of Scabies in a Newborn Nursery** • Barbara G. Ross, RN, CIC, BSN; Jennifer K. Wright-McCarthy, MD; Patricia A. DeLaMora, MD; Philip L. Graham III, MD, MSc

LETTERS TO THE EDITOR

- 518 QuantiFERON-TB Test for Annual Screening of Healthcare Workers: Not Yet Ready for Prime Time in Low-Prevalence Countries** • Manish Joshi, MD, FCCP; Thomas Monson, MD; Gail Woods, MD
- 518 Reply to Joshi et al** • Sumanth Gandra, MD, MPH; William S. Scott, MD, MPH; Vijaya Somaraju, MD, MPH, FACP
- 519 Consistency versus Accuracy in Reporting Central Line-Associated Bloodstream Infections** • Joan T. White, BS, MT, CIC; Henry Fraimow, MD
- 520 Toxin A-Negative, Toxin B-Positive *Clostridium difficile* Infection Diagnosed by Polymerase Chain Reaction** • Ying Cheng, MD; Pengcheng Du, BS; Chen Chen, PhD; Shengkai Yan, MD; Hongbing Jia, BS; Jing Wang, AD; Qirong Yan, BS; Hanping Feng, MD; Jinxing Lu, BS
- 522 Prevalence of Nasal Carriage of Mupirocin-Resistant *Staphylococcus aureus* among Hospitalized Patients in Thailand** • Anucha Apisarnthanarak, MD; David K. Warren, MD; Victoria J. Fraser, MD
- 523 Pseudo-outbreak of *Pseudomonas putida* Respiratory Infection Caused by Laboratory Contamination** • Caroline Neulier, PharmD; Nelly Breton; Béatrice Pangon, PhD; Alban Le Monnier, PharmD, PhD; Matthieu Henry-Lagarrigue, MD; Cécile Dujon, MD; Jacques Merrer, 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

Rob Blixt • 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
Anucha Apisarntharak, MD • Pratumthani, Thailand
Lennox Archibald, MD, FRCP • Alachua, FL
Hilary Babcock, MD • St. Louis, MO
Elise M. Beltrami, MD, MPH • Decatur, GA
David Birnbaum, PhD, MPH • Sidney, BC
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
Jon P. Furuno, PhD • Baltimore, MD
Petra Gastmeier, MD • Hanover, Germany
Dale N. Gerding, MD • Hines, IL
Donald A. Goldmann, MD • Boston, MA
Donna Haiduvan, RN, PhD, CIC • Tampa, FL
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, GA

Allison McGeer, MD • Toronto, ON

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
Eli Perencevich, MD, MS • Baltimore, MD
Michael A. Pfaller, MD • Iowa City, IA
Didier Pittet, MD, MS • Geneva, Switzerland
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 Ruden, MD • Berlin, Germany
William A. Rutala, PhD, MPH • Chapel Hill, NC
Lisa Saiman, MD, MPH • New York, NY
Sanjay Saint, MD, MPH • Ann Arbor, MI
William E. Scheckler, MD • Madison, WI
Lynne M. Schulster, PhD • Atlanta, GA
John A. Sellick, DO • Amherst, NY
Kent Sepkowitz, MD • New York, NY
Samir Shah, MD, MSCE • Philadelphia, PA
Andrew E. Simor, MD • Toronto, ON
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: 773-702-2538, 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 Paul Tucker, Breuning Nagle Associates, 59 Grove Street, New Canaan, CT 06840 (e-mail: paul@bna1.com); telephone: 847-669-1096, fax: 203-801-0011). 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

Individual subscription rates for 2011 are \$185. Institutional print + electronic and e-only subscriptions are available through JSTOR's Current Scholarship Program and include unlimited online access; rates are tiered according to an institution's type and research output: \$413 to \$1,034 (print + electronic), \$332 to \$884 (e-only). Institutional print-only is \$413. Additional taxes and/or postage for non-U.S. subscriptions may apply. Lower rates for fellows, residents, and students are available at <http://www.journals.uchicago.edu/ICHE>. Individuals have the option to order directly from the University of Chicago Press. Subscription agent for Japan: Kinokuniya Company, Ltd. Free or deeply discounted access is available in most developing nations through the Chicago Emerging Nations initiative (<http://www.journals.uchicago.edu/ceni/>).

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. © 2011 by the Society for Healthcare Epidemiology of America. All rights reserved. This publication is printed on acid-free paper.

Find the latest in infection control research and practice information in AJIC



American Journal of Infection Control

EDITOR: Elaine L. Larson, RN, PhD, FAAN, CIC

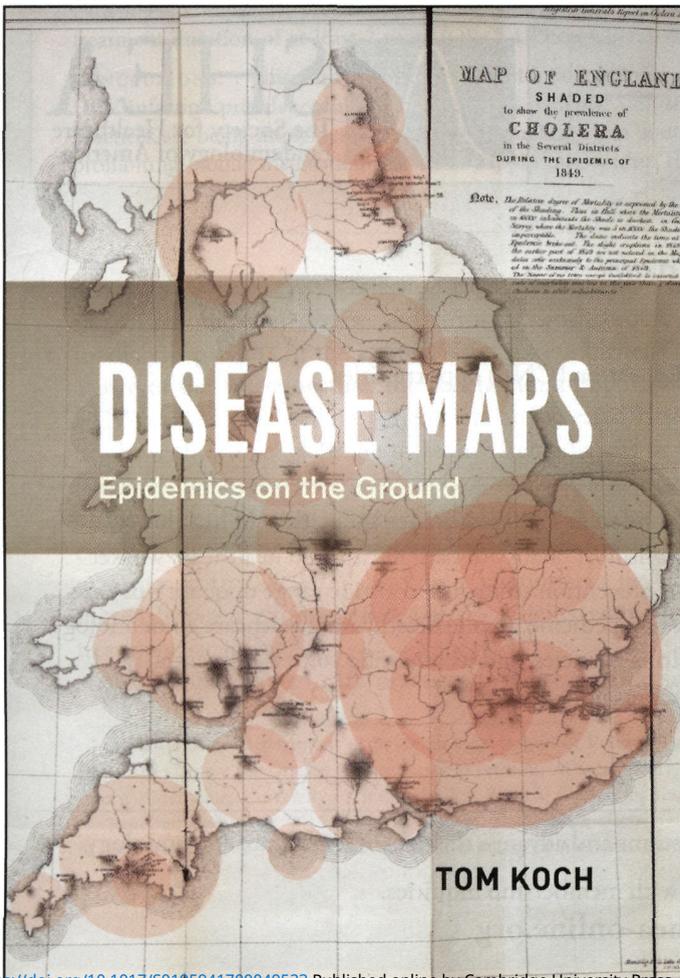
AJIC covers key topics and issues in infection control and epidemiology. Infection control professionals, including physicians, nurses, and epidemiologists, rely on **AJIC** for peer-reviewed articles covering clinical topics as well as original research. As the official publication of the *Association for Professionals in Infection Control and Epidemiology, Inc. (APIC)*, **AJIC** is the foremost resource on infection control, epidemiology, infectious diseases, quality management, occupational health, and disease prevention. **AJIC** also publishes relevant infection control guidelines. **AJIC** is included in Index Medicus and CINAHL.

**Official Publication
of the Association for
Professionals in
Infection Control and
Epidemiology, Inc.**

Register at ajicjournal.org to receive free access to Tables of Contents and all article abstracts; free access to select full text articles; free e-alerts and search personalization, and more!



Submit your manuscript at: <http://ees.elsevier.com/ajic/>



FORTHCOMING IN MAY

"*Disease Maps* is an extraordinary visual and narrative treat. I have come to look forward to Tom Koch's books for the wonderful and unique way that he can synthesize data and present it visually and in the process tell us magnificent stories."

Dr. Abraham Verghese,
Stanford University School of Medicine

"This is a masterful book in conception and structure. It is also extremely well written. What we find on reading is an exquisite telling of the history of the medical science of disease. The collection of medical maps, diagrams, and other illustrations is impressive in scope—there are many disease maps shown that have not been publicly available before or collected in one place."

Michael Friendly,
York University

CLOTH \$45.00

The University of Chicago Press
www.press.uchicago.edu

ICPIC 2011

1st International Conference on Prevention and Infection Control (ICPIC 2011)

29 June – 2 July 2011

Uni Mail, Geneva, Switzerland

ICPIC 2011 will host a very dense program including invited lectures given by top international experts, high level oral presentations according to themed tracks, poster rounds, satellite symposia, and a novel "Innovation Academy", which will act as a forum for leaders of innovations in the practice of infection control and prevention of antimicrobial resistance. The conference is a response to the increasing need to share knowledge and experience in healthcare-associated infection prevention and control on a global basis and already promises to be an exciting and must not miss event!

Contact:

ICPIC 2011

c/o MCI Suisse SA

Geneva, Switzerland

Phone: +41 22 33 99 577

Fax: +41 22 33 99 651

Email: icpic2011@mci-group.com

HUG  
Hôpitaux Universitaires de Genève
University of Geneva Hospitals
and Faculty of Medicine, Geneva, Switzerland



WHO Collaborating Centre
on Patient Safety
Infection Control & Improving Practices

www.icpic2011.com

Join SHEA

Access to the information you need to meet the infection prevention challenges ahead.

- One year subscription to *Infection Control & Hospital Epidemiology*
- Online access to *Infection Control & Hospital Epidemiology*
- Monthly newsletter with abstracts of scientific journal articles and current events
- Online job board
- Online member search
- Continuing Medical Education (CME) and Continuing Nursing Education (CNE) opportunities



About SHEA

The Society for Healthcare Epidemiology of America (SHEA) was founded in 1980 to advance the science of healthcare epidemiology and infection prevention. SHEA works to maintain the utmost quality of patient care and healthcare worker safety in all healthcare settings, applying epidemiologic principles and prevention strategies to a wide range of quality-of-care issues. SHEA is strengthened by its active membership in all branches of medicine, public health, and healthcare epidemiology. The Society's expertise is sought by healthcare regulatory and accrediting agencies, and its scientific voice is influential in guiding decision-making bodies towards rational, effective, cost-conscious policies.

Mission

SHEA's mission is to prevent and control healthcare-associated infections and advance the field of healthcare epidemiology.

Please contact info@shea-online.org with membership inquiries.

Join SHEA at www.shea-online.org