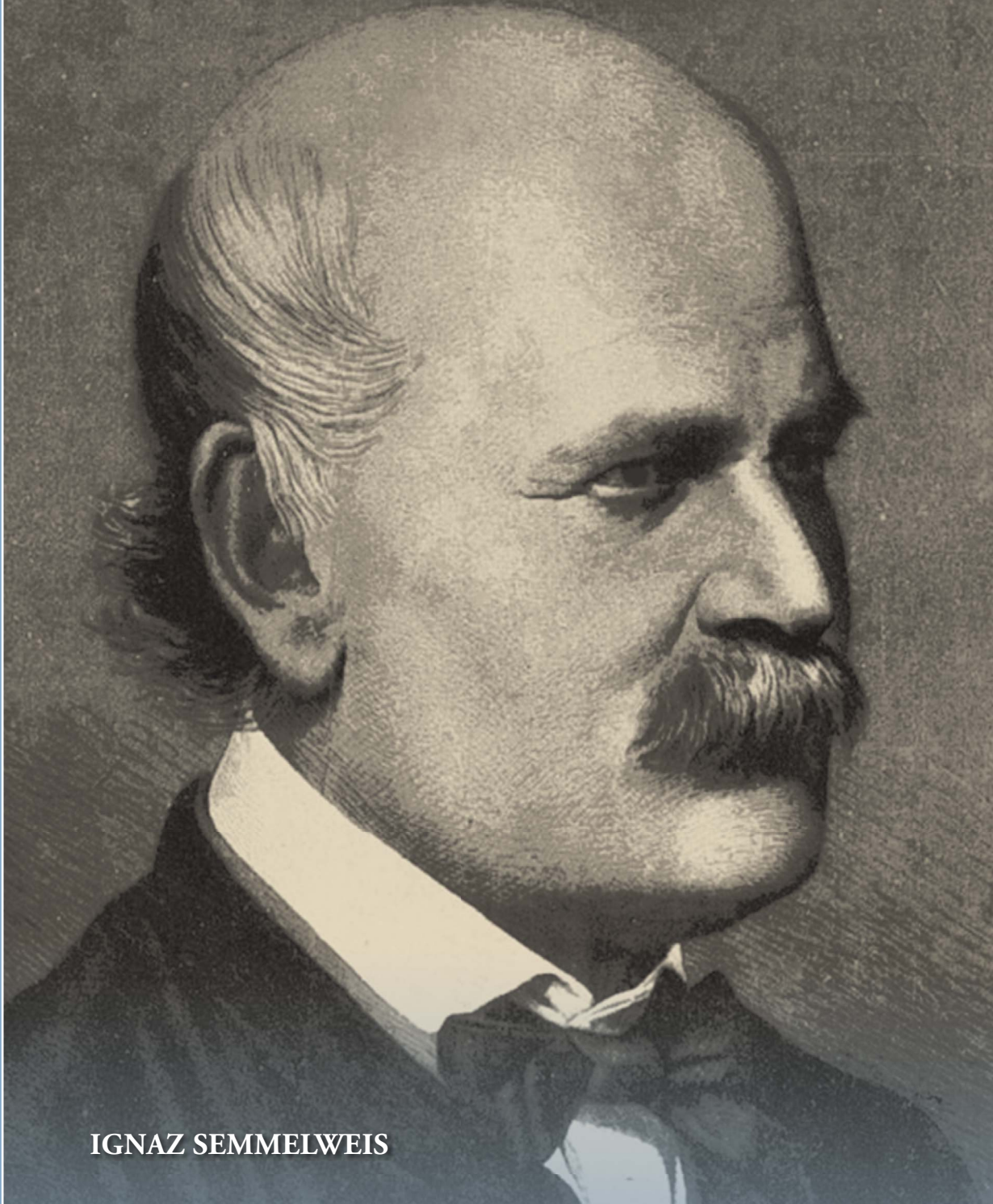


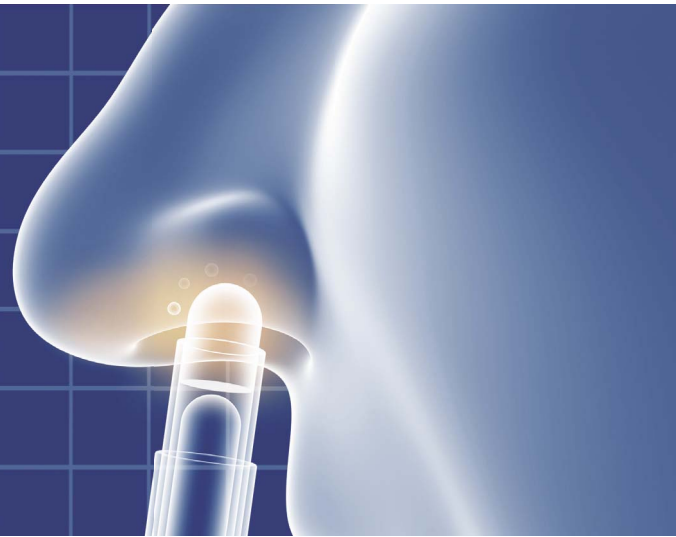
Volume 36, No 11

ICHE



IGNAZ SEMMELWEIS

Reduce *S. aureus* Nasal Carriage Without Antibiotics



“Our nurses and patients really like the Nozin program and with the cost savings it’s been a true win-win.”

Brian Kendler, Infection Preventionist, RN, CIC
Marshall Medical Center, CA

Clinically proven • Fast acting • Low cost

- ✓ Perioperative Care
- ✓ Same Day Decolonization*
- ✓ Universal ICU Carriage Reduction
- ✓ Supports Antibiotic Stewardship

Nozin® Nasal Sanitizer® antiseptic combines ethanol with moisturizing emollients and is clinically proven to profoundly reduce nasal colonization in one day.* No antibiotics. No iodine. With a Nozin® program, you can help protect patients and staff against the spread of infection, improve quality of care and reduce infection control costs.

Contact us to learn more
and for professional samples.

Nozin.com 877-669-4648

Nozin®

Think hand sanitizer for your nose.®

*Steed L, et al. Reduction of nasal Staphylococcus aureus carriage. American Journal of Infection Control. Vol 42, Issue 8, 2014.

©2015 Global Life Technologies Corp. All rights reserved. Made in USA. Nozin® Nasal Sanitizer® antiseptic is an OTC topical drug and no claim is made that it has an effect on any specific disease.
<https://doi.org/10.1017/ice.2015.243> Published online by Cambridge University Press

CONTENTS

Original Articles

- 1251** Severe Influenza in 33 US Hospitals, 2013–2014: Complications and Risk Factors for Death in 507 Patients
Nirav S. Shah, Jared A. Greenberg, Moira C. McNulty, Kevin S. Gregg, James Riddell IV, Julie E. Mangino, Devin M. Weber, Courtney L. Hebert, Natalie S. Marzec, Michelle A. Barron, Fredy Chaparro-Rojas, Alejandro Restrepo, Vagish Hemmige, Kunatum Prasadhrathsint, Sandra Cobb, Loreen Herwaldt, Vanessa Raabe, Christopher R. Cannavino, Andrea Green Hines, Sara H. Bares, Philip B. Antiporta, Tonya Scardina, Ursula Patel, Gail Reid, Parvin Mohazabnia, Suresh Kachhdiya, Binh-Minh Le, Connie J. Park, Belinda Ostrowsky, Ari Robicsek, Becky A. Smith, Jeanmarie Schied, Micah M. Bhatti, Stockton Mayer, Monica Sikka, Ivette Murphy-Aguilu, Priti Patwari, Shira R. Abeles, Francesca J. Torriani, Zainab Abbas, Sophie Toya, Katherine Doktor, Anindita Chakrabarti, Susanne Doblecki-Lewis, David J. Looney and Michael Z. David
- 1261** Sustained Reduction of Ventilator-Associated Pneumonia Rates Using Real-Time Course Correction With a Ventilator Bundle Compliance Dashboard
Thomas R. Talbot, Devin Carr, C. Lee Parmley, Barbara J. Martin, Barbara Gray, Anna Ambrose and Jack Starmer
- 1268** The Effect of Contact Precautions on Frequency of Hospital Adverse Events
Lindsay D. Croft, Michael Liquori, James Ladd, Hannah Day, Lisa Pineles, Elizabeth Lamos, Ryan Arnold, Preeti Mehrotra, Jeffrey C. Fink, Patricia Langenberg, Linda Simoni-Wastila, Eli Perencevich, Anthony D. Harris and Daniel J. Morgan
- 1275** Quantifying the Exposure to Antibiotic-Resistant Pathogens Among Patients Discharged From a Single Hospital Across All California Healthcare Facilities
Rupak Datta, Shawn Brown, Vinh Q. Nguyen, Chenghua Cao, John Billimek, Taliser Avery, Bruce Y. Lee and Susan S. Huang
- 1283** The Complex Epidemiology of Carbapenem-Resistant *Enterobacter* Infections: A Multicenter Descriptive Analysis
Tsilia Lazarovitch, Keren Amity, Joseph R. Coyle, Benjamin Ackerman, Ruthy Tal-Jasper, Hadas Ofer-Friedman, Kayoko Hayakawa, Christopher Bogan, Paul R. Lephart, Tamir Kaplansky, Moran Maskit, Tal Azouri, Ronit Zaidenstein, Federico Perez, Robert A. Bonomo, Keith S. Kaye and Dror Marchaim
- 1292** Risk of MRSA Infection in Patients with Intermittent versus Persistent MRSA Nares Colonization
Daniel I. Vigil, Wesley D. Harden, Anne E. Hines, Patrick W. Hosokawa, William G. Henderson and Mary T. Bessesen
- 1298** Epidemiology of Methicillin-Resistant *Staphylococcus aureus* Bloodstream Coinfection Among Adults With Candidemia in Atlanta, GA, 2008–2012
Jessica Reno, Saumil Doshi, Amy K. Tunalı, Betsy Stein, Monica M. Farley, Susan M. Ray and Jesse T. Jacob
- 1305** Epidemiology of Methicillin-Susceptible *Staphylococcus aureus* in a Neonatology Ward
Yvonne Achermann, Kati Seidl, Stefan P. Kuster, Nadja Leimer, Nina Durisch, Evelyne Ajdler-Schäffler, Stephan Karrer, Gabriela Senn, Anne Holzmann-Bürgel, Aline Wolfensberger, Antonio Leone, Romaine Arlettaz, Annelies S. Zinkernagel and Hugo Sax
- 1313** A Pilot Study of a Computerized Decision Support System to Detect Invasive Fungal Infection in Pediatric Hematology/Oncology Patients
Adam Bartlett, Emma Goeman, Aditi Vedi, Mona Mostaghim, Toby Trahair, Tracey A. O'Brien, Pamela Palasanthiran and Brendan McMullan

- 1318** In the Endemic Setting, *Clostridium difficile* Ribotype 027 Is Virulent But Not Hypervirulent
Samuel L. Aitken, M. Jahangir Alam, Mohammed Khaleduzzuman, Seth T. Walk, William L. Musick, Vy P. Pham, Jennifer L. Christensen, Robert L. Atmar, Yang Xie and Kevin W. Garey
- 1324** Impact of Toxigenic *Clostridium difficile* Colonization on the Risk of Subsequent *C. difficile* Infection in Intensive Care Unit Patients
Sarah Tschudin-Sutter, Karen C. Carroll, Pranita D. Tamma, Madeleine L. Sudekum, Reno Frei, Andreas F. Widmer, Brandon C. Ellis, John Bartlett and Trish M. Perl
- 1330** Catheter-Associated Urinary Tract Infections in Intensive Care Unit Patients
Rudy Tedja, Jean Wentink, John C O'Horo, Rodney Thompson and Priya Sampathkumar
- 1335** Commentary: CAUTI Surveillance: Opportunity or Opportunity Cost?
Daniel J. Livorsi and Eli N. Perencevich
- 1337** Post-Outbreak Investigation of *Pseudomonas aeruginosa* Faucet Contamination by Quantitative Polymerase Chain Reaction and Environmental Factors Affecting Positivity
Emilie Bédard, Céline Laferrière, Dominique Charron, Cindy Lalancette, Christian Renaud, Nadia Desmarais, Eric Déziel and Michèle Prévost

Concise Communications

- 1344** Respiratory Outbreak Investigations: How Many Specimens Should Be Tested?
Emily Schleihauf, Sumana Fathima, Janice Pettipas, Jason J. LeBlanc, Todd F. Hatchette, Steven J. Drews and David Haldane
- 1348** Skin and Environmental Contamination in Patients Diagnosed With *Clostridium difficile* Infection but Not Meeting Clinical Criteria for Testing
Sirisha Kundrapu, Venkata Sunkesula, Myreen Tomas and Curtis J. Donskey
- 1351** Ertapenem Prophylaxis Associated With an Increased Risk of *Clostridium difficile* Infection Among Surgical Patients
Seungwon Lee, Priya Prasad, Matthew Lin, Susan Garritson, Amy Nichols and Catherine Liu
- 1355** Housestaff Knowledge Related to Urinary Catheter Use and Catheter-Associated Urinary Tract Infections
Molly L. Paras, Erica S. Shenoy, Heather E. Hsu, Rochelle P. Walensky and David C. Hooper
- 1358** Large Nosocomial Outbreak Associated with a Norwegian Scabies Index Case Undergoing TNF- α Inhibitor Treatment: Management and Control
Valeria Belvisi, Giovanni Battista Orsi, Cosmo Del Borgo, Paolo Fabietti, Adriana Ianari, Francesco Albertoni, Patricia Porcelli, Concetta Potenza and Claudio Maria Mastroianni

Research Briefs

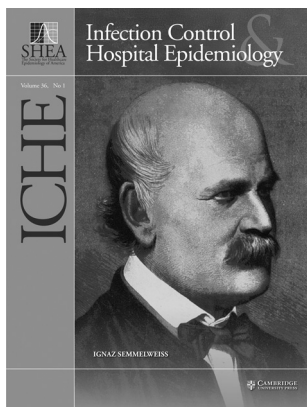
- 1361** Clearance Rate of Carbapenemase-Producing Enterobacteriaceae Carriage Among Hospitalized Patients
Kyu-Ri Kim, Jeong-Young Lee, Hee-Youn Park, Sun-Hee Kwak, Young-Ju Lim, Min-Jee Hong, Sun-Kyung Kim, So-Yeon Park, Hyeon-Jeong Kim, Hye-Suk Choi, Mi-Na Kim, Hye-Ran Choi, Jae-Sim Jeong and Sang-Ho Choi
- 1362** Identical *Achromobacter* Strain in Reusable Surface Disinfection Tissue Dispensers and a Clinical Isolate
Claudio Kupfahl, Mattias Walther, Constanze Wendt and Heike von Baum
- 1364** Are Clinical Characteristics of Patients with Sepsis Codes Changing over Time?
Anica Law and Michael Klompas, for the CDC Prevention Epicenters

Letters to the Editor

- 1367** The Role of ATP Luminometers in Infection Control
Lauren Roady
- 1368** Reply to Roady
Greg S. Whiteley, Chris Derry, Trevor Glasbey and Paul Fahey

- 1368** Infection Control Implications of Protracted Lengths of Stay With Noninfluenza Viral Influenza-Like Illnesses in Hospitalized Adults During the 2015 Influenza A (H₃N₂) Epidemic
Burke A. Cunha, James J. Connolly, Adina C. Musta and Eileen Abruzzo
- 1370** The Economics of a Chickenpox Outbreak in an Oncology Center in Eastern India
Gaurav Goel, Anirban Laha, Maitrayee Sarkar De, Sanjay Bhattacharya, Aseem Mahajan, Venkata Raman Ramanan and Mammen Chandy
- 1372** Outbreak of Shigellosis in a Homeless Shelter With Healthcare Worker Transmission—British Columbia, April 2015
Michelle Murti, Ken Louie, Mark Bigham and Linda M. N. Hoang
- 1373** Paper Records of Patients in Isolation for Colonization or Infection With Special Organisms: A Potential Fomite?
Sebastian Schulz-Stübner, Petra Zimmer and Peter Leonards
- 1375** Infection Control in Therapeutic Hyperbaric Chambers: Practical Inventory in France
Doriane Huart, Anne Henckes, Guy Cochard, Jean-Ralph Zahar, Raoul Baron and Philippe Saliou

About the cover:



Starting in 2015, the cover format of each volume of *Infection Control & Hospital Epidemiology* will highlight one of the many professionals throughout history who not only recognized how disease might be spread, but also how epidemiological principles could be applied to reduce healthcare associated infections.

Ignaz Semmelweis (1818-1865) was a Hungarian physician who was appointed an assistant in obstetrics at the Allgemeines Krankenhaus in Vienna. He recognized that women delivered by midwife trainees were significantly less likely to die of puerperal fever than those delivered by physicians or medical students. He hypothesized that puerperal fever could be spread to mothers at the time of delivery by the hands of obstetricians that became contaminated while performing autopsies on women who had died in the maternity ward. Controlled trials of hand washing with chloride of lime solution and disinfection of instruments showed that he could reduce infections among the women cared for by physicians by almost 20-fold. Unfortunately, he did not publish his findings which contributed to the lack of acceptance of antisepsis among senior staff;

Semmelweis' academic appointment was not renewed. He left for Budapest, but his beliefs failed to gain traction among colleagues in Hungary. Semmelweis' increasingly erratic and angry behavior led to commitment to an asylum; he died there within a few short weeks at the age of 47 years. Contrary to legend, Semmelweis' autopsy suggests that he did not die of streptococcal gangrene, but rather of trauma related to beatings inflicted by the guards at the asylum and an early Alzheimer-type dementia.

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

Carol Chenoweth, MD • Ann Arbor, MI
Ebbing Lautenbach, MD, MPH • Philadelphia, PA
David Weber, MD, MPH • Chapel Hill, NC

STATISTICS CONSULTANTS

Jon P. Furuno, PhD • Portland, OR
Jessina C. McGregor, PhD • Portland, OR

SECTION EDITOR FOR GUIDELINES, POSITION PAPERS, AND INVITED REVIEWS

Eli Perencevich, MD, MS • Iowa City, IA

MANAGING EDITOR

Meighan Schreiber, MSSA • New York, NY

PAST EDITORS

Infection Control

Richard P. Wenzel, MD, 1980-1987 (vols. 1-8)

Infection Control & Hospital Epidemiology

Richard P. Wenzel, MD, 1988-1992

(vols. 9-13)

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

Deverick Anderson, MD, MPH • Durham, NC
Anucha Apisarnthanarak, MD • Pratumthani, Thailand
Lennox Archibald, MD, FRCP • Alachua, FL
Hilary Babcock, MD • St. Louis, MO
Shailen Banerjee, PhD • Atlanta, GA
Elise M. Beltrami, MD, MPH • Atlanta, GA
Jo Anne Bennett, RN, PhD • New York, NY
David Birnbaum, PhD, MPH • Sidney, BC
Marc Bonten, MD • Utrecht, Netherlands
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
Donald E. Craven, MD • Burlington, MA
Christopher Crnich, MD, MS • Madison, WI
Erika D'Agata, MD, MPH • Boston, MA
Daniel Diekema, MD • Iowa City, IA
Erik Dubberke, MD, MSPH • St. Louis, MO
Charles E. Edmiston, Jr., PhD • Milwaukee, WI
Theodore C. Eickhoff, MD • Denver, CO
Mohamad Fakhri, MD, MPH • Grosse Pointe Woods, MI
Petra Gastmeier, MD • Berlin, Germany
Jeffrey Gerber, MD, PhD • Philadelphia, PA
Dale N. Gerding, MD • Hines, IL
Donald A. Goldmann, MD • Boston, MA
Nicholas Graves, PhD • Brisbane, Australia
Donna Haiduvén, RN, PhD, CIC • Tampa, FL
Anthony D. Harris, MD, MPH • Baltimore, MD
Elizabeth Henderson, PhD • Calgary, AB
David K. Henderson, MD • Bethesda, MD
Loreen A. Herwaldt, MD • Iowa City, IA

Peter N. R. Heseltine, MD • Brea, CA
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
Linda Mundy, MD • Collegeville, PA
Joseph M. Mylotte, MD, CIC • Buffalo, NY
Jan Evans Patterson, MD • San Antonio, TX
David A. Pegues, MD • Philadelphia, PA
Didier Pittet, MD, MS • Geneva, Switzerland
Isaam Raad, MD • Houston, TX
Manfred L. Rotter, MD, DipBact • Vienna, Austria
William A. Rutala, PhD, MPH • Chapel Hill, NC
Lisa Saiman, MD, MPH • New York, NY
Sanjay Saint, MD, MPH • Ann Arbor, MI
Sorana Segal-Maurer, MD • Flushing, NY
Lynne M. Schulster, PhD • Atlanta, GA
John A. Sellick, DO • Amherst, NY
Kent Sepkowitz, MD • New York, NY
Andrew E. Simor, MD • Toronto, ON
Philip W. Smith, MD • Omaha, NE
Kurt Stevenson, MD, MPH • Columbus, OH
Nimalie Stone, MD • Atlanta, GA
Thomas Talbot, MD, MPH • Nashville, TN
Paul Tambyah, MBBS • Singapore
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 • Detroit, MI

Infection Control & Hospital Epidemiology (ISSN 0899-823X) is published monthly by Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013, USA.

Editorial Office

Communications should be addressed to the Editor, *Infection Control & Hospital Epidemiology*, 32 Avenue of the Americas, New York, NY 10013 (email: mshreiber@cambridge.org; telephone: 212-337-5954, fax: 212-337-5959). Contributors should consult the Instructions for Contributors, which is available at the journal's Web site.

Advertising

Please direct advertising inquiries to M. J. Mrvica Associates, 2 West Taunton Avenue, Berlin, NJ 08009 (e-mail: mjmrvica@mrvica.com; telephone: 856-768-9360, fax: 856-753-0064). Publication of an advertisement in *Infection Control & Hospital Epidemiology* does not imply endorsement of its claims by the Society for Healthcare Epidemiology of America, by the Editor, or by Cambridge University Press.

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>, email: info@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 Cambridge University Press. Full details may be found at: www.cambridge.org/about-us/rights-permissions.

Subscriptions

The individual subscription rate for 2015 is \$224. Individuals have the option to order directly from Cambridge University Press. Institutional print + electronic and e-only subscriptions are available from Cambridge University Press and include unlimited online access; rates are tiered according to an institution's type and research output and may be reviewed at the journal's CJO homepage: <http://journals.cambridge.org/ICE>.

Please direct subscription inquiries and requests for back issues to Customer Services at Cambridge University Press, e-mail: subscriptions_newyork@cambridge.org (USA, Canada, and Mexico) or journals@cambridge.org (outside of USA, Canada, and Mexico).

Postmaster: Send address changes to *Infection Control & Hospital Epidemiology*, Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA.