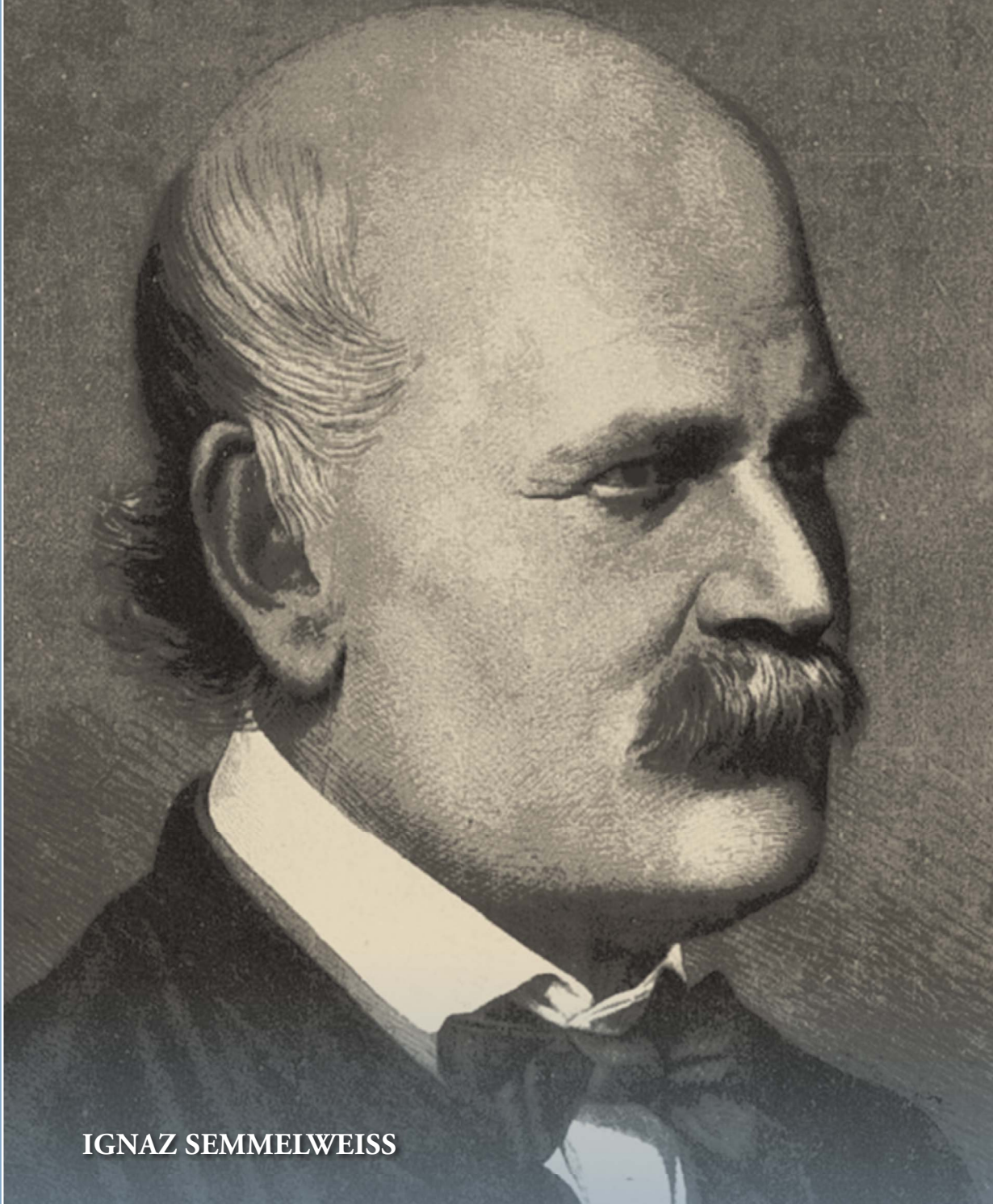


Volume 36, No 8

ICHE



IGNAZ SEMMELWEISS

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/icc.2015.153> Published online by Cambridge University Press

CONTENTS

Original Articles

- 871** Impact of the Centers for Medicare and Medicaid Services Hospital-Acquired Conditions Policy on Billing Rates for 2 Targeted Healthcare-Associated Infections
Alison Tse Kawai, Michael S. Calderwood, Robert Jin, Stephen B. Soumerai, Louise E. Vaz, Donald Goldmann and Grace M. Lee
- 878** Impact of Mandatory Public Reporting of Central Line-Associated Bloodstream Infections on Blood Culture and Antibiotic Utilization in Pediatric and Neonatal Intensive Care Units
Kelly B. Flett, Al Ozonoff, Dionne A. Graham, Thomas J. Sandora and Gregory P. Priebe
- 886** The Likelihood of Hospital Readmission Among Patients With Hospital-Onset Central Line-Associated Bloodstream Infections
Carolyn Khong, James Baggs, David Kleinbaum, Ronda Cochran and John A. Jernigan
- 893** Identification of Recurrent *Clostridium difficile* Infection Using Administrative Codes: Accuracy and Implications for Surveillance
Jing Wen, Grant E. Barber and Ashwin N. Ananthkrishnan
- 899** Prevention of Healthcare-Associated Pneumonia with Oral Care in Individuals Without Mechanical Ventilation: A Systematic Review and Meta-Analysis of Randomized Controlled Trials
Asako Kaneoka, Jessica M. Pisegna, Keri V. Miloro, Mel Lo, Hiroki Saito, Luis F. Riquelme, Michael P. LaValley and Susan E. Langmore
- 907** Incidence of Surgical Site Infection Following Mastectomy With and Without Immediate Reconstruction Using Private Insurer Claims Data
Margaret A. Olsen, Katelin B. Nickel, Ida K. Fox, Julie A. Margenthaler, Kelly E. Ball, Daniel Mines, Anna E. Wallace and Victoria J. Fraser
- 915** Practices to Reduce Surgical Site Infections Among Women Undergoing Cesarean Section: A Review
Rebeccah A. McKibben, Samantha I. Pitts, Catalina Suarez-Cuervo, Trish M. Perl and Eric B. Bass
- 922** Interindividual Contacts and Carriage of Methicillin-Resistant *Staphylococcus aureus*: A Nested Case-Control Study
Thomas Obadia, Lulla Opatowski, Laura Temime, Jean-Louis Herrmann, Éric Fleury, Pierre-Yves Boëlle and Didier Guillemot, on behalf of the i-Bird Study Group
- 930** Multidrug-Resistant Gram-Negative Bacteria: Inter- and Intradissemiation Among Nursing Homes of Residents With Advanced Dementia
Erika M. C. D'Agata, Daniel Habtemariam and Susan Mitchell
- 936** Risk Factors for Recurrence of Carbapenem-Resistant Enterobacteriaceae Carriage: Case-Control Study
Yossi Bart, Mical Paul, Orna Eluk, Yuval Geffen, Galit Rabino and Khetam Hussein
- 942** Residence in Skilled Nursing Facilities Is Associated with Tigecycline Nonsusceptibility in Carbapenem-Resistant *Klebsiella pneumoniae*
David van Duin, Eric Cober, Sandra S. Richter, Federico Perez, Robert C. Kalayjian, Robert A. Salata, Scott Evans, Vance G. Fowler, Jr., Robert A. Bonomo and Keith S. Kaye
- 949** Diagnostic Errors that Lead to Inappropriate Antimicrobial Use
Gregory A. Filice, Dimitri M. Drekonja, Joseph R. Thurn, Galen M. Hamann, Bobbie T. Masoud and James R. Johnson

- 957** Quantifying the Hawthorne Effect in Hand Hygiene Compliance Through Comparing Direct Observation With Automated Hand Hygiene Monitoring
Stefan Hagel, Jana Reischke, Miriam Kesselmeier, Johannes Winning, Petra Gastmeier, Frank M. Brunkhorst, André Scherag and Mathias W. Pletz
- 963** Sharp Decrease of Reported Occupational Blood and Body Fluid Exposures in French Hospitals, 2003–2012: Results of the French National Network Survey, AES-RAISIN
N. Floret, O. Ali-Brandmeyer, F. L'Hériveau, C. Bervas, S. Barquins-Guichard, G. Pelissier, D. Abiteboul, P. Parneix, E. Bouvet, C. Rabaud, and Working Group AES-RAISIN

Concise Communications

- 969** *Clostridium Difficile* Infection in the United States: A National Study Assessing Preventive Practices Used and Perceptions of Practice Evidence
Sanjay Saint, Karen E. Fowler, Sarah L. Krein, David Ratz, Scott A. Flanders, Erik R. Dubberke and M. Todd Greene
- 972** Outbreak of *Clostridium difficile* Infections at an Outpatient Hemodialysis Facility—Michigan, 2012–2013
Isaac See, Suparna Bagchi, Stephanie Booth, Daniel Scholz, Andrew I. Geller, Lydia Anderson, Heather Moulton-Meissner, Jennie L. Finks, Karen Kelley, Carolyn V. Gould and Priti R. Patel
- 975** Contamination of the Hospital Environment From Potential *Clostridium difficile* Excretors Without Active Infection
Jason S. Biswas, Amita Patel, Jonathan A. Otter, Esther van Kleef and Simon D. Goldenberg
- 978** The Impact of Discontinuing Contact Precautions for VRE and MRSA on Device-Associated Infections
Michael B. Edmond, Nadia Masroor, Michael P. Stevens, Janis Ober and Gonzalo Bearman
- 981** Carbapenems Versus Piperacillin-Tazobactam for Bloodstream Infections of Nonurinary Source Caused by Extended-Spectrum Beta-Lactamase-Producing Enterobacteriaceae
Hadas Ofer-Friedman, Coral Shefler, Sarit Sharma, Amit Tirosh, Ruthy Tal-Jasper, Deepthi Kandipalli, Shruti Sharma, Pradeep Bathina, Tamir Kaplansky, Moran Maskit, Tal Azouri, Tsilia Lazarovitch, Ronit Zaidenstein, Keith S. Kaye and Dror Marchaim
- 986** Four Moments for Patient Hand Hygiene: A Patient-Centered, Provider-Facilitated Model to Improve Patient Hand Hygiene
Venkata CK Sunkesula, Shanina Knighton, Trina F. Zabarsky, Sirisha Kundrapu, Patricia A. Higgins and Curtis J. Donskey
- 990** Assessment of Residual Moisture and Maintenance of Sterility in Surgical Instrument Sets after Sterilization
Camille Fayard, Christophe Lambert, Catherine Guimier-Pingault, Marion Levast and Raphaëlle Germi

Research Brief

- 993** Chlorhexidine Bathing of Hospitalized Patients: Beliefs and Practices of Nurses and Patient Care Technicians, and Potential Barriers to Compliance
Andrea Green Hines, Suzanne Nuss, Mark E. Rupp, Elizabeth Lyden, Kate Tyner and Angela Hewlett

Letters to the Editor

- 995** Central Venous Catheter-Related Bloodstream Infections in Obese Hematologic Patients
Enrico Schalk, Jacqueline Färber, Thomas Fischer and Florian H. Heidel
- 996** Patients with Psychiatric Disorders Can Also Have CLABSIs: A Response to “CLABSI or Munchausen’s or Both”
Erin Brooks, Nancy E. Christy, Avram H. Mack and Mary McFadden
- 997** Substandard Sanitation in Hospital Canteens Poses Problems in Developing Countries
Beuy Joob and Viroj Wiwantikit

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 Fakih, 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 Haiduvan, 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.

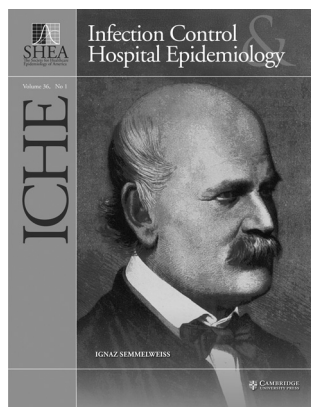
Subscriptions

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.

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.

ADVERTISEMENT

**Request for Proposals –
BIOPATCH[®] Protective Disk
with CHG**

Ethicon, Inc. is interested in receiving proposals for investigating the use of BIOPATCH[®] Protective Disk with CHG for use on Peripheral IV insertion sites. We are able to consider clinical study proposals with funding requests below US \$100,000.00.

We are specifically interested in proposals investigating the use of BIOPATCH[®] in the adoption of clinically indicated replacement for Peripheral IVs.

If you have interest in this area of research, please contact us for further information. Proposals under this program will only be accepted until September 30, 2015.

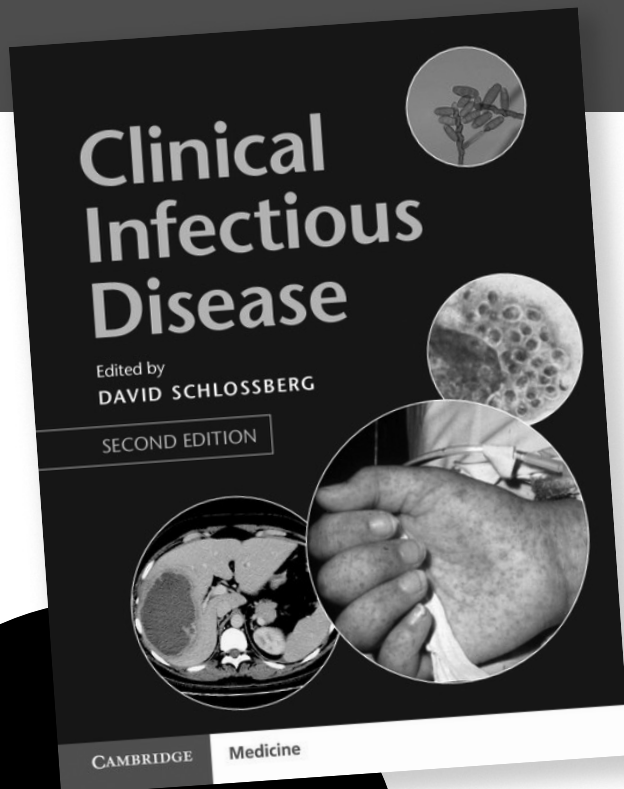
Interested parties should contact Ethicon, Inc. at gsgiis@its.jnj.com for further information.

CAMBRIDGE

Medicine

NOW AVAILABLE!

The new edition of the popular and clinically oriented user-friendly text...



Edited by **David Schlossberg, MD**
Temple University, Philadelphia, USA

A fully updated version of this popular, clinically oriented, user-friendly text on infectious disease, with even more helpful graphics, tables, algorithms and images. It is packed full of information on diagnosis, differential diagnosis and therapy. In addition to the traditional organization of organ-system and pathogen-related information, this text also includes clinically helpful sections on the susceptible host (with individual chapters, for example, on the diabetic, the elderly, the injection drug user and the neonate), infections related to travel, infections related to surgery and trauma, nosocomial infection and bioterrorism. Positioned between the available encyclopedic tomes and the smaller pocket guides, this is a convenient, comprehensive, and highly practical reference for all those practicing in infectious diseases as well as internal or general medicine.

- Fully updated and user-friendly
- Abundantly illustrated with high-quality images and tables
- Bridges the gap between the available encyclopedic tomes and smaller pocket guides

Hardback | 1608 pages | 114 b/w illus | 236 color illus | 522 tables
9781107038912 | May 2015

Order now and save 20% off the list price!

ORDER NOW
AND SAVE 20%

For more details, including table of contents, list of contributors, and price, visit www.cambridge.org and follow instructions here to get a **20% discount off the list price!**

Order direct from the publisher by visiting www.cambridge.org or calling toll free at **1-800-872-7423** and use discount code **Schloss20** to save 20%. (Offer expires 7/31/2015.)

Download a free QR code app on your SmartPhone and scan this code to go straight to our website



CAMBRIDGE
UNIVERSITY PRESS
www.cambridge.org

32 Avenue of the Americas
New York, NY 10013