

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY™

EDITORIAL

***Clostridium difficile*: Responding to a New Threat From an Old Enemy**

L. CLIFFORD McDONALD, MD, FACP

672

ORIGINAL ARTICLES

Varying Rates of *Clostridium difficile*-Associated Diarrhea at Prevention Epicenter Hospitals

SEJEAN SOHN, MPH; MICHAEL CLIMO, MD; DANIEL DIEKEMA, MD; VICTORIA FRASER, MD; LOREEN HERWALDT, MD; SUSAN MARINO, MS, CIC; GARY NOSKIN, MD; TRISH PERL, MD, MSC; XIAOYAN SONG, MD, MS; JEROME TOKARS, MD, MPH; DAVID WARREN, MD, MPH; EDWARD WONG, MD; DEBORAH S. YOKOE, MD, MPH; THERESA ZEMBOWER, MD; KENT A. SEPKOWITZ, MD, FOR THE PREVENTION EPICENTER HOSPITALS

676

Risk Factors for Acquisition of *Clostridium difficile*-Associated Diarrhea Among Outpatients at a Cancer Hospital

TARA N. PALMORE, MD; SEJEAN SOHN, MPH; SHARP F. MALAK, MD, MPH; JANET EAGAN, RN, MPH; KENT A. SEPKOWITZ, MD

680

***Clostridium difficile* Among Hospitalized Patients Receiving Antibiotics: A Case-Control Study**

SCOTT MODENA, MD; DILIP BEARELLY, MD; KENNETH SWARTZ, PHD; FRANK K. FRIEDENBERG, MD

685

Spatial and Temporal Analysis of *Clostridium difficile* Infection in Patients at a Pediatric Hospital in California

CARMEN E. REXACH, PHD; YAJARAYMA J. TANG-FELDMAN, MS; STUART H. COHEN, MD

691

Nosocomial Bacteremia: Clinical Significance of a Single Blood Culture Positive for Coagulase-Negative Staphylococci

BENOÎT FAVRE, MD; STÉPHANE HUGONNET, MD, MSC; LUCI CORREA, MD; HUGO SAX, MD; PETER ROHNER, MD; DIDIER PITTET, MD, MS

697

Octenidine Hydrochloride for the Care of Central Venous Catheter Insertion Sites in Severely Immunocompromised Patients

ANDREAS TIETZ, MD; RENO FREI, MD, FAMH; MARC DANGEL, RN; DORA BOLLIGER, RN; JAKOB R. PASSWEG, MD, MS; ALOIS GRATWOHL, MD; ANDREAS F. WIDMER, MD, MS

703

The Effects of Prolonged Ethanol Exposure on the Mechanical Properties of Polyurethane and Silicone Catheters Used for Intravascular Access

CHRISTOPHER J. CRNICH, MD, MS; JEREMY A. HALFMANN, BS; WENDY C. CRONE, PHD; DENNIS G. MAKI, MD

708

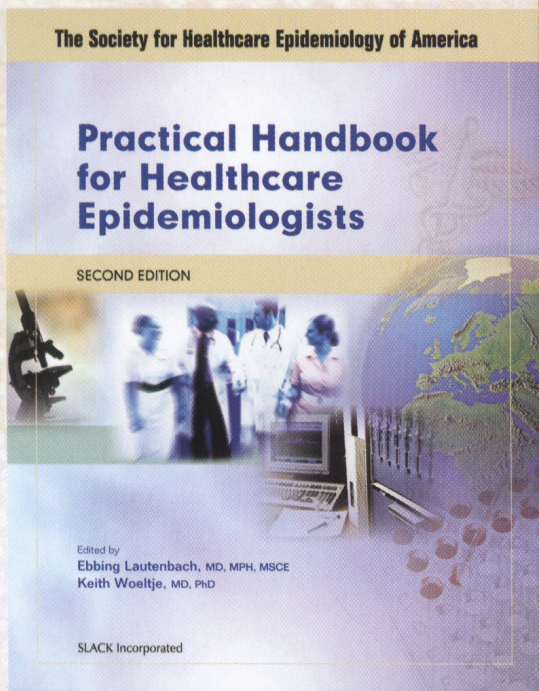
Nonuniform Risk of Bloodstream Infection With Increasing Central Venous Catheter-Days

MARY-LOUISE MCLAWS, DPHTM, MPH, PHD; GEOFFREY BERRY, MA, PHD

715

Continued inside.

You Have Questions... We Have the Answers



Practical Handbook for Healthcare Epidemiologists Second Edition

Ebbing Lautenbach, MD, MPH, MSCE, *University of Pennsylvania, Philadelphia, PA* and Keith Woeltje, MD, PhD, *Washington University School of Medicine, St. Louis, MO*

400 pp., Hard Cover, 2004, ISBN 1-55642-677-1, Order #16771, **\$94.95**

If you work in today's healthcare epidemiology programs **you will need** the latest edition of *Practical Handbook for Healthcare Epidemiologists*. Situations that are encountered daily can be challenging, and now the answers needed are available in one solid resource.

The Society for Healthcare Epidemiology of America (SHEA) has recruited over 50 recognized leaders in the field to share their expertise. They discuss overarching goals, as well as successful strategies for handling specific situations and problems.

New to this edition:

- Patient safety
- Bioterrorism preparedness
- Antimicrobial resistance
- Hand hygiene

Topics Inside:

- How to negotiate with administration
- How to survive JCAHO and OSHA inspections
- How to implement exposure workups
- Ethical decisions and application to infection control
- The building blocks of surveillance-identification to communication
- Extending infection control programs into long-term care and outpatient facilities

BUY Both the Book and PDF CD-ROM – SAVE 25%!

ORDER FORM

QUANTITY	TITLE	ORDER #	PRICE
	Practical Handbook for Healthcare Epidemiologists, 2E	16671	\$ 94.95
	Practical Handbook for Healthcare Epidemiologists, 2E PDF CD-ROM	16992	\$ 94.95
	Special: Book and PDF CD-ROM	16771 & 16992	\$142.42

Subtotal	\$
Purchases in CA & NJ are subject to tax. Please add applicable state and local tax	\$
Handling	\$ 5.00
Total	\$

Are the shipping and billing addresses the same?
 Yes No

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____

Check enclosed (Payable to SLACK Incorporated)

Charge my:

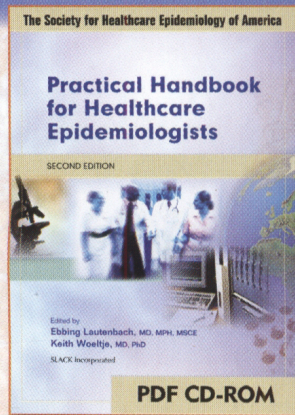
American Express Visa Mastercard

Account #: _____ Security Code: _____

Exp. date: _____ Signature _____

Prices are subject to change. Shipping charges may apply. Shipping and handling charges are non-refundable.

Call: (800) 257-8290 or
(856) 948-1000
 World Wide Web Site:
www.slackbooks.com/epidemiology
 Mail order form to:
 SLACK Incorporated
 Professional Book Division
 6900 Grove Road
 Thorofare, NJ 08086-9864
 Fax: (856) 853-5991
 E-mail: orders@slackinc.com



This is the most complete hands-on source about healthcare epidemiology and infection prevention and control.

Buy the Book on CD-ROM!

Practical Handbook for Healthcare Epidemiologists, Second Edition, PDF CD-ROM
 CD-ROM, 2004, ISBN 1-55642-699-2,
 Order #16992, **\$94.95**

The CD-ROM contains all the text, all the images, every single element of the book available in an easy-to-carry CD-ROM!

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY™

CONTENTS

Continued from cover

ORIGINAL ARTICLES

Cleaning and Sterilization Protocol for Reused Cardiac Electrophysiology Catheters Inactivates Hepatitis and Coxsackie Viruses

JULIAN D. DRUCE, BSC, MSc; JESSICA S. RUSSELL, BSc (HONS); CHRISTOPHER J. BIRCH, BSc, MSc, PhD;
KAREN VICKERY, PhD; RICHARD W. HARPER, MBBS, FRACP, FACC; JOSEPH J. SMOLICH, MBBS, BMEDSc, PhD 720

Surveillance of Nosocomial Infections in a Neurologic Intensive Care Unit

DIRK ZOLLDANN, MD; CHRISTOPH SPITZER, MD; HELGA HÄFNER, MD; BIRGIT WAITSCHIES, RN;
WOLFGANG KLEIN, RN; DORIT SOHR, PhD; FRANK BLOCK, MD; RUDOLF LÜTTICKEN, MD;
SEBASTIAN W. LEMMEN, MD 726

CORRECTION

675

Full-text articles available online at ICHEJournal.com

THE PUBLICATION OF ADVERTISING IN THE JOURNAL DOES NOT CONSTITUTE ANY GUARANTEE OR ENDORSEMENT BY THE SOCIETY FOR HEALTHCARE EPIDEMIOLOGY OF AMERICA OR SLACK INCORPORATED OF THE ADVERTISED PRODUCT OR SERVICE OR OF CLAIMS MADE BY THE ADVERTISER. THE PUBLICATION OF ARTICLES AND OTHER EDITORIAL MATERIAL IN THE JOURNAL DOES NOT NECESSARILY REPRESENT THE POLICY RECOMMENDATIONS OR ENDORSEMENT BY THE SOCIETY.

PUBLISHER: Infection Control and Hospital Epidemiology (ISSN-0195-9417, Canadian GST#129780466) is published exclusively by SLACK Incorporated 12 times a year. Address: 6900 Grove Road, Thorofare, NJ 08086. Telephone: (856) 848-1000.

SHEA: 66 Canal Center Plaza, Suite 600, Alexandria, VA 22314; telephone, 703-299-0200; fax, 703-299-0204; e-mail address, info@shea-online.org.

COPYRIGHT 2005 The Society for Healthcare Epidemiology of America, Inc., and SLACK Incorporated. All rights reserved. No part of this publication may be reproduced without written permission from the publisher. Printed in the USA.

SUBSCRIPTIONS: Requests should be addressed to the publisher. Subscription rates in the United States and possessions: Individual: One year-\$149.00; Two years-\$253.00; Three years-\$335.00; Institutional: One year-\$279.00; Two years-\$474.00; Three years-\$628.00. Fellows: \$54.50 per year with proof of training status. Canada: add 7% Goods & Services tax; Overseas: add \$49.00 each year for delivery by air service. Single copies of current issues may be obtained for \$24.00.

INSTRUCTIONS TO AUTHORS: Authors may submit electronic versions of their manuscripts prepared in accordance with the 2004 revision of the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals." An electronic version is available at www.icmje.org. Submit to RapidReview.com. All submissions must be accompanied by copyright form(s) signed by all authors.

REPRINTS: All requests to reprint or use material published herein should be addressed to John Kain, SLACK Incorporated, 6900 Grove Road, Thorofare, NJ 08086. For reprint orders and prices, contact Rebecca Fogarty at (856) 848-1000. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by SLACK Incorporated, provided that the base fee of \$1.00 per copy, plus \$.20 per page is paid directly to Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923; phone (978) 750-8400. This consent does not extend to other kinds of copying, such as for general distribution, resale, advertising and promotional purposes, or for creating new collective works.

CHANGE OF ADDRESS: Notice should be sent to the publisher 6 weeks in advance of effective date. Include old and new addresses with zip codes. The publisher cannot accept responsibility for undelivered copies. Periodicals postage paid at Thorofare, New Jersey 08086-9447 and at additional mailing offices. **POSTMASTER:** Send address changes to SLACK Incorporated, 6900 Grove Road, Thorofare, NJ 08086.

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY is listed in Index Medicus, Current Contents-Clinical Practice, Hospital Literature Index, Cumulative Index to Nursing & Allied Health Literature, Nursing Abstracts, Laboratory Performance Information Exchange System, and RNdex Top 100.

EDITORIAL OFFICE

SLACK Incorporated
6900 Grove Road
Thorofare, NJ 08086
(856) 848-1000; (856) 848-6091 (FAX)
E-mail: iche@slackinc.com

EDITOR

William R. Jarvis, MD

DEPUTY EDITOR

David P. Calfee, MD, MS

ASSISTANT EDITOR

Preeti N. Malani, MD, MSJ

SENIOR ASSOCIATE EDITORS

C. Glen Mayhall, MD
Gina Pugliese, RN, MS
William Schaffner, MD

ASSOCIATE EDITORS

Donald A. Goldmann, MD
Didier Pittet, MD, MS
Andreas Widmer, MD, MS

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, North Carolina

From the Laboratory

Marcus Zervos, MD
Royal Oak, Michigan

**Infections in Immunocompromised
Patients**

Kent Sepkowitz, MD
New York City, New York

Information Management

John A. Sellick, DO
Amherst, New York

Issues in Surgery

James T. Lee, MD, PhD
St. Paul, Minnesota

Medical News

Gina Pugliese, RN, MS
Chicago, Illinois
Martin S. Favero, PhD
Irvine, California

Practical Healthcare Epidemiology

Loreen A. Herwaldt, MD
Iowa City, Iowa

Statistics for Hospital Epidemiology

David Birnbaum, PhD, MPH
Sidney, British Columbia, Canada

Topics in Long-Term Care

Philip W. Smith, MD
Omaha, Nebraska

Topics in Occupational Medicine

David Weber, MD, MPH
Chapel Hill, North Carolina

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY™

EDITORIAL ADVISORY BOARD

- | | |
|---------------------------------|------------------------------------|
| J. Wesley Alexander, MD | Cincinnati, Ohio |
| Miriam Alter, PhD | Atlanta, Georgia |
| Hilary Babcock, MD | St. Louis, Missouri |
| Elise M. Beltrami, MD, MPH | Decatur, Georgia |
| Marc J. M. Bonten, MD, PhD | Utrecht, The Netherlands |
| John M. Boyce, MD | New Haven, Connecticut |
| Christian Brun-Buisson, MD | Creteil, France |
| John P. Burke, MD | Salt Lake City, Utah |
| Yehuda Carmeli, MD, MPH | Tel Aviv, Israel |
| Carol Chenoweth, MD | Ann Arbor, Michigan |
| Sara E. Cosgrove, MD, MS | Baltimore, Maryland |
| Donald E. Craven, MD | Burlington, Massachusetts |
| Erika D'Agata, MD, MPH | Boston, Massachusetts |
| Franz Daschner, MD | Freiburg, Germany |
| Patch Dellinger, MD | Seattle, Washington |
| Charles E. Edmiston, Jr., PhD | Milwaukee, Wisconsin |
| Theodore C. Eickhoff, MD | Denver, Colorado |
| Jean Yves Fagon, MD, MPH | Paris, France |
| Mark Farrington, MA, FRCPath | Cambridge, England, United Kingdom |
| Richard A. Garibaldi, MD | Farmington, Connecticut |
| Petra Gastmeier, MD | Hanover, Germany |
| Dale N. Gerding, MD | Hines, Illinois |
| Stephan Harbarth, MD, MS | Geneva, Switzerland |
| Anthony D. Harris, MD, MPH | Baltimore, Maryland |
| David K. Henderson, MD | Bethesda, Maryland |
| Peter N.R. Heseltine, MD | San Juan, California |
| Karen Hoffmann, RN, CIC, MS | Chapel Hill, North Carolina |
| Janine Jagger, MPH, PhD | Charlottesville, Virginia |
| John A. Jernigan, MD, MS | Atlanta, Georgia |
| Jacob L. Kool, MD, PhD | Fort Collins, Colorado |
| Ebbing Lautenbach, MD, MPH | Philadelphia, Pennsylvania |
| Allison McGeer, MD | Toronto, Ontario, Canada |
| John E. McGowan, Jr., MD | Atlanta, Georgia |
| Leonard A. Mermel, DO, ScM | Providence, Rhode Island |
| Robert R. Muder, MD | Pittsburgh, Pennsylvania |
| Carlene A. Muto, MD, MS | Pittsburgh, Pennsylvania |
| Joseph M. Mylotte, MD, CIC | Buffalo, New York |
| Lindsay Nicolle, MD | Winnipeg, Manitoba, Canada |
| Juhani Ojajarvi, MD | Helsinki, Finland |
| Michael T. Osterholm, PhD, MPH | Minneapolis, Minnesota |
| David L. Paterson, MBBS, FRACP | Pittsburgh, Pennsylvania |
| Jan Evans Patterson, MD | San Antonio, Texas |
| Sindy M. Paul, MD | Yardley, Pennsylvania |
| David A. Pegues, MD | Los Angeles, California |
| Michael A. Pfaller, MD | Iowa City, Iowa |
| Samuel Ponce de Leon, MD, MSc | Mexico City, Mexico |
| Issam Raad, MD | Houston, Texas |
| Jordi Rello, MD, PhD | Tarragona, Spain |
| Manfred L. Rotter, MD, DipBact | Vienna, Austria |
| Henning Rüden, MD | Berlin, Germany |
| Lisa Saiman, MD, MPH | New York, New York |
| Syed A. Sattar, PhD | Ottawa, Ontario, Canada |
| William E. Scheckler, MD | Madison, Wisconsin |
| Lynne M. Sehulster, PhD | Atlanta, Georgia |
| Andrew E. Simor, MD | Toronto, Ontario, Canada |
| Denis W. Spelman, FRACP | Melbourne, Victoria, Australia |
| V. Susan Springthorpe, BSc, MSc | Ottawa, Ontario, Canada |
| Jeffrey R. Starke, MD | Houston, Texas |
| Janet E. Stout, PhD | Pittsburgh, Pennsylvania |
| Clyde Thornsberrry, PhD | Franklin, Tennessee |
| Jerome Tokars, MD, MPH | Atlanta, Georgia |
| Timothy R. Townsend, MD | Baltimore, Maryland |
| Antoni Trilla, MD, PhD | Barcelona, Spain |
| Robert A. Weinstein, MD | Chicago, Illinois |
| Sergio B. Wey, MD | São Paulo, Brazil |

CORPORATE

President
Peter Slack

Executive Vice President
Richard N. Roash

Vice President, Publishing Operations
John C. Carter

Vice President, U.S. Sales
Wayne McCourt

Vice President, International Sales
William Harley

Vice President, Finance
Darrell Blood

Vice President, Information Services

Jon Schafer
Creative Director
Linda Baker

EDITORIAL

Editorial Director
Jennifer A. Kilpatrick, ELS

Executive Editor
Shirley P. Strunk, ELS

Associate Editor
Jaime Underwood

SALES

Director of Association Services
Kathy Huntley

**Sales Director,
Recruitment/Classified Division**
Kristy Irwin

Advertising Sales Administrator
Monique McLaughlin

Advertising Sales Representative
Scotty Turner

Classified/Recruitment Sales
Elizabeth Roash

Director of Reprint Sales
John Kain

PRODUCTION

Production Director
Christine Main

Circulation Director
Lester J. Robeson, CCCP

SLACK
INCORPORATED
6900 Grove Road
Thorofare, NJ 08086-9447
(856) 848-1000



FREE CME / CPE OFFERING WEBCAST
AVAILABLE SEPTEMBER 2005

ANTIMICROBIAL RESISTANCE PREVENTION INITIATIVE

The American Society for Microbiology (ASM) and the Society for Healthcare Epidemiology of America (SHEA) have long been committed to the advancement of research in the antimicrobial resistance arena. To further this effort, ASM and SHEA members have worked together to create a new program that will provide educational opportunities designed to explore the specific epidemiology and molecular mechanisms of resistance. This CME/CPE program (offered via webcast and printed supplement to *The American Journal of Medicine* and *American Journal of Infection Control*) will ultimately outline comprehensive patient and antibiotic management strategies with practical applications.

CO-CHAIRS:

Robert C. Moellering, MD
Herrman Blumgart Professor of Medicine
Harvard Medical School
Chair, Department of Medicine
Beth Israel Deaconess Medical Center
Boston, MA

Neil Fishman, MD
Director, Department of Healthcare
Epidemiology and Infection Control
Director, Antimicrobial Management Program
University of Pennsylvania Health System
Philadelphia, PA

Sponsored by:

In collaboration with:



Registration information available
www.arpi2005.net

Focus on **2005**
**HOSPITAL
ACQUIRED
INFECTIONS**

Advances in Management and Control
November 11-12, 2005 Miami, Florida
Trump International Sonesta Hotel

John E. Edwards, MD
University of California
Harbor Medical Center
Los Angeles, California

David K. Henderson, MD
Bethesda, Maryland

For details and to register, go to
www.imedex.com

imedex®
education is the best medicine™
70 Technology Drive
Alpharetta, Georgia
30005-3969 USA
Tel.: +1 (770) 751 7332
Fax: +1 (770) 751 7334
Email: meetings@imedex.com
www.imedex.com

THE SOCIETY FOR HEALTHCARE EPIDEMIOLOGY OF AMERICA
SAVE THE DATE

March 18-21, 2006



16th ANNUAL SCIENTIFIC MEETING ♦ HILTON CHICAGO
WWW.SHEA-ONLINE.ORG