

Infection Control Hospital Epidemiology

Volume 40, No 5





MAY 2019



Don't miss the premier international infectious diseases meeting of the year



October 2-6, 2019 Washington, DC www.idweek.org

A JOINT MEETING OF









https://doi.org/10.1017/ice.2019.101 Published online by Cambridge University Press

Volume 40

2019

Number 5

CONTENTS

SHEA White Paper

501 The role of electronic health record and "add-on" clinical decision support systems to enhance antimicrobial stewardship programs *Kristi M. Kuper, Jerod L. Nagel, Jarrod W. Kile, Larissa S. May and Francesca M. Lee*

Original Articles

- **512** Impact of an antimicrobial stewardship intervention in India: Evaluation of post-prescription review and feedback as a method of promoting optimal antimicrobial use in the intensive care units of a tertiary-care hospital *Priscilla Rupali, Prasannakumar Palanikumar, Divyashree Shanthamurthy, John Victor Peter, Subramani Kandasamy, Naveena Gracelin Princy Zacchaeus, Hanna Alexander, Premkumar Thangavelu, Rajiv Karthik, Ooriapadickal Cherian Abraham, Joy Sarojini Michael, Hema Paul, Balaji Veeraraghavan, Binila Chacko, Visalakshi Jeyaseelan, George Alangaden, Tyler Prentiss and Marcus J Zervos*
- **520** *Commentary*: Minding the gap: Rethinking implementation of antimicrobial stewardship in India *Payal K. Patel*
- 522 Threatened efficiency not autonomy: Prescriber perceptions of an established pediatric antimicrobial stewardship program Julia E. Szymczak, Eimear Kitt, Molly Hayes, Kathleen Chiotos, Susan E. Coffin, Emily R. Schriver, Ashley M. Patton, Talene A. Metjian and Jeffrey S. Gerber
- **528** Outcomes from an inpatient beta-lactam allergy guideline across a large US health system *Kimberly G. Blumenthal, Yu Li, Joyce T. Hsu, Anna R. Wolfson, David N. Berkowitz, Victoria A. Carballo, Jesse M. Schwartz, Kathleen A. Marquis, Ramy Elshaboury, Ronak G. Gandhi, Barbara B. Lambl, Monique M. Freeley, Alana Gruszecki, Paige G. Wickner and Erica S. Shenoy*
- 536 Hospital epidemiologists' and infection preventionists' opinions regarding hospital-onset bacteremia and fungemia as a potential healthcare-associated infection metric *Raymund B. Dantes, Lilian M. Abbo, Deverick Anderson, Lisa Hall, Jennifer H. Han, Anthony D. Harris, Surbhi Leekha, Aaron M. Milstone, Daniel J. Morgan, Nasia Safdar, Marin L. Schweizer, Sharmila Sengupta, Susan K. Seo and Clare Rock*
- 541 Predicting probability of perirectal colonization with carbapenem-resistant Enterobacteriaceae (CRE) and other carbapenem-resistant organisms (CROs) at hospital unit admission *Katherine E. Goodman, Patricia J. Simner, Eili Y. Klein, Abida Q. Kazmi, Avinash Gadala, Matthew F. Toerper, Scott Levin, Pranita D. Tamma, Clare Rock, Sara E. Cosgrove, Lisa L. Maragakis, and Aaron M. Milstone for the CDC Prevention Epicenters Program and the CDC MIND-Healthcare Program*

- **551** Vancomycin-resistant *Enterococcus* (VRE) outbreak in a neonatal intensive care unit and special care nursery at a tertiary-care hospital in Australia—A retrospective case-control study *Patiyan Andersson, Wendy Beckingham, Claire Louise Gorrie, Karina Kennedy, Kathryn Daveson, Susan Alicia Ballard, Ming Chen, Katrina Roper and Nicholas Coatsworth*
- **559** Impact of doffing errors on healthcare worker self-contamination when caring for patients on contact precautions *Koh Okamoto, Yoona Rhee, Michael Schoeny, Karen Lolans, Jennifer Cheng, Shivani Reddy, Robert A. Weinstein, Mary K. Hayden and Kyle J. Popovich for the Centers for Disease Control and Prevention Epicenters Program*
- **566** Motion-capture system to assess intraoperative staff movements and door openings: Impact on surrogates of the infectious risk in surgery *Gabriel Birgand, Christine Azevedo, Stephane Rukly, Roger Pissard-Gibollet, Gaëlle Toupet, Jean-François Timsit, Jean-Christophe Lucet and the ARIBO Study Group*
- 574 A diagnostic algorithm for the surveillance of deep surgical site infections after colorectal surgery *Tessa Mulder, Marjolein F.Q. Kluytmans-van den Bergh, Maaike S.M. van Mourik, Jannie Romme, Rogier M.P.H. Crolla, Marc J.M. Bonten and Jan A.J.W. Kluytmans*

Reviews

- **579** Integrating bedside nurses into antibiotic stewardship: A practical approach *Elizabeth A. Monsees, Pranita D. Tamma, Sara E. Cosgrove, Melissa A. Miller and Valeria Fabre*
- **585** The human microbiota and infection prevention *R. Araos and Erika M.C. D'Agata*
- **590** Surgical site infections and the microbiome: An updated perspective *Richard P. Wenzel*

Concise Communications

- 597 Factors affecting the geographic variability of antibiotic-resistant healthcare-associated infections in the United States using the CDC Antibiotic Resistance Patient Safety Atlas Julianne N. Kubes and Scott K. Fridkin
- 600 Antimicrobial resistance patterns in urinary *E. coli* isolates after a change in a single center's guidelines for uncomplicated cystitis in ambulatory settings *Patrick P. Ryan, Bryan C. Knepper, Rachel M. Everhart and Connie S. Price*

Research Briefs

603 Predictive characteristics of methicillin-resistant *Staphylococcus aureus* nares screening tests for methicillin resistance among *S. aureus* clinical isolates from hospitalized veterans *Teresa C. Fox, Paul Thuras and James R. Johnson*

605 Increased time spent on terminal cleaning of patient rooms may not improve disinfection of high-touch surfaces *John D. Coppin, Frank C. Villamaria, Marjory D. Williams, Laurel A. Copeland, John E. Zeber and Chetan Jinadatha*

Letter to the Editor

- 607 New SHEA expert guidance for infection prevention in the anesthesia work area needs improvement *Elliott S. Greene*
- 608 Transmission routes of the virus causing viral hemorrhagic fever: Extreme precautions are prudent but high-quality evidence must be gathered *Takuya Yamagishi, Kensaku Kakimoto, Ikuko Doi, Chiaki Kawakami, Tomoe Shimada, Tamano Matsui, Kazunori Oishi and Masayuki Saijo*
- **609** Practice and attitudes toward alcohol-based hand disinfection among German infection control teams *Sebastian Schulz-Stübner, A Volkmann, W Ebner and T Hauer*
- 613 Outbreak of scabies in a neonatal intensive care unit Vini Vijayan, Elizabeth Marrero, Anna Gaspar, Christy Wisdom, Michele D. Honeycutt and W. Matthew Linam

Corrigenda

- 615 Use of a best practice alert linking *Clostridioides* difficile infection test results to a severity-based treatment order set CORRIGENDUM
- 616 A comparison of the efficacy of multiple ultraviolet light room decontamination devices in a radiology procedure room CORRIGENDUM
- **618** Automated data Mining of the electronic health record for investigation of healthcare-associated outbreaks CORRIGENDUM
- 619 Peripheral arterial catheter colonization in cardiac surgical patients CORRIGENDUM

Erratum

620 Aerosol transmission of severe fever with thrombocytopenia syndrome virus during resuscitation — ERRATUM

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

An Official Publication of the Society for Healthcare Epidemiology of America

EDITOR

Suzanne F. Bradley, MD • Ann Arbor, MI

DEPUTY EDITOR Carol Chenoweth, 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

David P. Calfee, MD, MS • New York, NY Lindsay E. Nicolle, MD • Winnipeg, Manitoba Trevor C. Van Schooneveld, MD • Omaha, NE David Weber, MD, MPH • Chapel Hill, NC

STATISTICS CONSULTANTS Jon P. Furuno, PhD • Portland, OR

Jessina C. McGregor, PhD • Portland, OR

MANAGING EDITOR Lindsay MadMurray • New York, NY

PAST EDITORS

Infection Control • Portland, OR 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- Carol A. Kauffman, MD • Ann Arbor, MI Lennox Archibald, MD, FRCP • Alachua, FL 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 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 Haiduven, 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 Mini Kamboj, MD • New York, NY

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. Sehulster, PhD • Atlanta, GA John A. Sellick, DO • Amherst, 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, One Liberty Plaza, New York, NY 10006, USA.

Editorial Office

Communications should be addressed to the Editor, Infection Control & Hospital Epidemiology, One Liberty Plaza, New York, NY 10006 (email: iche.managingeditor@cambridge.org. 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 2019 is \$273. 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: cambridge.org/ICHE.

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, One Liberty Plaza, New York, NY 10006 USA.

About the cover:



Since 2015, the cover format of each volume of *Infection Control and Hospital Epidemiology* has been c1hanged to honor one of the many professionals through out history who recognized not only how disease might be spread but also how those principles could be applied to reduce health care associated infections.

Rabbi Moshe ben Maimon or Moses Maimonides (son of Maimon) was born in Cordoba, Spain, a center of intellectual and religious freedom, on March 30, circa 1135. Maimon ben Joseph, his father, was a prominent scholar, writer, and judge for Jewish religious courts. Maimonidesstudied with Averroes, aprominent physician-philosopher. In 1148, his family left Cordoba after a repressive dynasty, the Almohades Caliphate that ruled in Spain and North Africa during the 12th and 13th centuries, required that they either convert to Islam, emigrate, or be put to death. They wandered first to Fez, Morocco, and to Acco, Palestine, before finally settling in Old Cairo (Fostat), Egypt, circa 1165. His father and brother established a business selling precious stones, but soon after, his father died and his brother David perished in a shipwreck. Maimonides turned to medicine as a means to support both families. While only in

his thirties, Maimonides was appointed as physician to the Court of the Sultan, and he served as head of the Jewish community in Cairo. During the Crusades, Maimonides' reputation as a healer was so great that King Richard the Lion hearted offered him a position as his personal physician.

Maimonides wrote many scholarly works on a variety of subjects ranging from biblical and Talmudic law to logic, science, and medicine. He embraced the use of careful scientific reasoning and eschewed mysticism. In his 10 books on medicine, Maimonides was an early advocate for the importance of hygiene, bathing, and the need for fresh air, clean water, a healthy diet, as well as proper disposal of refuse and placement of toilets far away from living quarters. Maimonides was an early "steward" who recommended non pharmacological interventions first. He also noted where evidence was lacking and further investigation was needed before recommendations could be made. Many of the concerns and observations that Maimonides made more than 800 years ago remain highly relevant to the field of infection prevention and control today.

Maimonides died in Cairo on December 13, 1204 at the age of 69. Several legends are a scribed to Maimonides. It is unlikely that he wrote the Oathor Prayer of Maimonides. He is buried in Tiberias, Palestine, on the western shore of the Sea of Galilee in present-day Israel. However, this site was not chosen at random by a donkey that roamed free while bearing his body; Maimonides was interred at Tiberias at his request. Even today, Maimonides remains a highly regarded physician, philosopher, and scholar among Jewish, Arabic, and Christiancircles.

Cover image: Statue of the Jewish scholar Moses Maimonides, Rabbi Mosheh Ben Maimon, Cordoba, Andalusia, Spain - courtesy of Shutterstock.

Solutions to reduce HAIS









TEEZyme® Enzymatic Sponges

TEEZyme super absorbent sponges are designed to hold enzymatic detergent in, so that the detergent is guaranteed to disperse over the probe surface and is distributed more evenly. This provides longer contact time with biofilm and contaminants allowing the detergent to break them down.

- TEEZyme enzymatic sponges aid in the solubilization of polysaccharides and removal of biofilm allowing for high-level disinfectants to kill microbes
- TEEZyme enzymatic sponges have a proprietary blend of enzymes
 designed to break down all bio burden blood, carbohydrates, protein,
- polysaccharides, fats, oils, uric acid and other nitrogenous compounds • TEEZyme enzymatic sponges are lint-free, latex-free and dust-free

QwikDry[®] TEE Probe Drying Cloths

QwikDry TEE probe drying cloths have been developed to give healthcare professionals the added confidence of properly dried ultrasound TEE probes prior to re-use or storage. The super absorbent pad effectively removes moisture from TEE ultrasound probes without damaging the probe or sticking to the ultrasound probe during the drying process.

- Single-use
- Non-abrasive surface for easy glide on TEE probe
- Individually packaged, irradiated cloth
- Engineered textile with internal highly absorbent membrane

TPorter® Transportation System

TPorter TEE Ultrasound Probe Transportation and Procedure Case is designed to effectively and securely move high-level disinfected TEE ultrasound probes to the procedure area and then return the biologically soiled TEE ultrasound probe for reprocessing. TPorter features a variety of molded compartments to accommodate the TEE ultrasound probe, bite block(s), a PullUp[™] Bio-Barrier Sleeve and a TEEZyme enzymatic sponge.

- Constructed of polycarbonate for excellent visibility and strength
 Individual compartments for electrical connector, cables and
- insertion tube
- Individual compartment for transportation of pre- and post-care items
- Designed to transport all major TEE probe brands

CS Medical \bigwedge

2179 East Lyon Station Road • Creedmoor, NC 27522 Toll Free: 877.255.9472 • Phone: 919.255.9472 www.csmedicalllc.com • info@csmedicalllc.com

CSAD.0015.190207