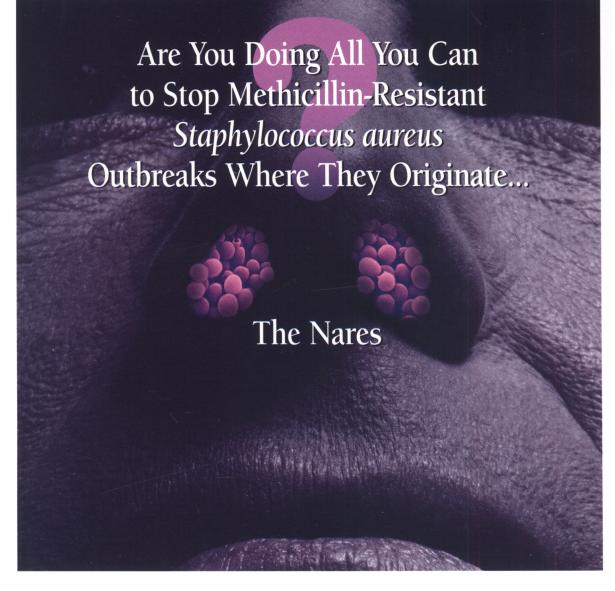
An Official Journal of The Society for Healthcare Epidemiology of America

PUBLISHED FOR THE SOCIETY BY SLACK INCORPORATED

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY®

EDITORIAL

The Price of a Surgical-Site Infection: More Than Just Excess Length of Stay Edward S. Wong, MD	722
ORIGINAL ARTICLES	
The Impact of Surgical-Site Infections in the 1990s: Attributable Mortality, Excess Length of Hospitalization, and Extra Costs Kathryn B. Kirkland, MD; Jane P. Briggs, BSN; Sharon L. Trivette, RN; William E. Wilkinson, PhD; Daniel J. Sexton, MD	725
An Outbreak of Hospital-Acquired Hepatitis B Virus Infection Among Patients Receiving Chronic Hemodialysis Yvan J.F. Hutin, MD, MSc; Susan T. Goldstein, MD; Jay K. Varma, MD; Joan B. O'Dair, RN, MPH; Eric E. Mast, MD, MPH; Craig N. Shapiro, MD; Miriam J. Alter, PhD	731
Safety of Peripheral Intravenous Catheters in Children Ruth B. Shimandle, RN, MPH; Daniel Johnson, MD; Mark Baker, MD; Naomi Stotland, MD; Theodore Karrison, PhD; Paul M. Arnow, MD	736
"Pulse" Nasal Mupirocin Maintenance Regimen in Patients Undergoing Continuous Ambulatory Peritoneal Dialysis Joseph M. Mylotte, MD, CIC; Lucinda Kahler, BS, MS; Ellen Jackson, RN	741
An Outbreak of Gram-Negative Bacteremia in Hemodialysis Patients Traced to Hemodialysis Machine Waste Drain Ports Susan A. Wang, MD, MPH; Rachel B. Levine, MD; Loretta A. Carson, MS; Matthew J. Arduino, DrPH; Teresa Killar, RN; F. Gregory Grillo, MD; Michele L. Pearson, MD; William R. Jarvis, MD	746
A Canadian Survey of Prophylactic Antibiotic Use Among Hip-Fracture Patients Dick Zoutman, MD; Laurence Chau, MD; James Watterson, MD; Thomas Mackenzie, MD; Marina Djurfeldt, Msc	752
CONCISE COMMUNICATIONS	,
Outbreak of Stenotrophomonas maltophilia Bacteremia Among Patients Undergoing Bone Marrow Transplantation: Association With Faulty Replacement of Handwashing Soap	750
JEFFREY D. KLAUSNER, MD, MPH; CAROL ZUKERMAN, RN, CIC; AJIT P. LIMAYE, MD; LAWRENCE COREY, MD Usefulness of Pulsed-Field Gel Electrophoresis in Assessing	756
Nosocomial Transmission of Pertussis Michèle Nouvellon, MD; Jean-François Gehanno, MD; Martine Pestel-Caron, PhD; Christian Weber; Jean-François Lemeland, PhD; Nicole Guiso, PhD	758
A Case-Control Study to Detect Modifiable Risk Factors for Colonization With Vancomycin-Resistant Enterococci	
Mark Loeb, MD, MSc; Suzette Salama, PhD; Maxine Armstrong-Evans, RN; Gina Capretta; Jan Olde, RN, CIC	760



Bactroban Nasal is indicated for eradication of nasal colonization with methicillin-resistant S. aureus (MRSA) in adult patients and healthcare workers as part of a comprehensive infection control program to reduce the risk of infection among high-risk patients during MRSA outbreaks.
Single-use tube (actual size)

In a hospital study, *Bactroban* Nasal contributed to a dramatic reduction in MRSA infections and vancomycin costs during an outbreak.²



Excellent safety profile

The most frequently reported adverse events were headache (9%), rhinitis (6%), respiratory disorder (including upper respiratory tract congestion) (5%), pharyngitis (4%) and taste perversion (3%). Safety in children under 12 years of age has not been established in controlled clinical trials.

Contraindications ... Do not use *Bactroban* Nasal in patients with known hypersensitivity to any of the constituents of the product.

Please see brief summary of prescribing information on adjacent page.

References: 1. Bactroban® Nasal prescribing information, 1995. **2.** Reagan DR, Dula RT, Palmer BH, et al. Control of MRSA in a VAMC with limited resources. Prog Abstr 31st Interscience Conference on Antimicrobial Agents and Chemotherapy, Chicago, U.S.A., Sept. 29-Oct. 2, 1991, p 104.







2% ointment for intranasal use

BACTROBAN® NASAL (mupirocin calcium ointment), 2% Brief summary. For complete prescribing information, s package insert.

INDICATIONS AND USAGE Bactroban Nasal is indicated for eradication of nasal coloniza-tion with methicillin-resistant Staphylococcus aureus in adult patients and health care workers as part of a comprehensive infection control program to reduce the risk of infection among patients at high risk of methicillin-resistant *S. aureus* infection during institutional outbreaks of infections with this pathogen.

NOTE:

- There are insufficient data at this time to establish that this product is safe and effective as part of an intervention program to prevent autoinfection of high-risk patients from their own nasal colonization with *S. aureus*. (1)
- There are insufficient data at this time to recommend use of *Bactroban* Nasal for general prophylaxis of any infec-tion in any patient population. (2)
- tion in any patient population. Greater than 90% of subjects/patients in clinical trials had eradication of nasal colonization 2 to 4 days after therapy was completed. Approximately 30% recolonization was reported in one domestic study within 4 weeks after com-pletion of therapy. These eradication rates were clinically and statistically superior to those reported in subjects/ patients in the vehicle-treated arms of the adequate and well-controlled studies. Those treated with vehicle had eradication rates of 5% to 30% at 2 to 4 days post-thera-py with 85% to 100% recolonization within 4 weeks. **NTRAINDICATIONS** (3)

CONTRAINDICATIONS

Bactroban Nasal is contraindicated in patients with known hypersensitivity to any of the constituents of the product. WARNINGS

WARNINGS AVOID CONTACT WITH THE EYES. Application of Bactroban Nasal to the eye under testing conditions has caused severe symptoms such as burning and tearing. These symptoms resolved within days to weeks after discontinuation of the

In the event of a sensitization or severe local irritation from *Bactroban* Nasal, usage should be discontinued.

PRECAUTIONS

General: As with other antibacterial products, prolonged use may result in overgrowth of nonsusceptible microorganisms, including fungi. (See **DOSAGE AND ADMINISTRATION** in complete prescribing information.)

complete prescribing information.) Information for Patients: Patients should: apply approxi-mately one-half of the ointment from the single-use tube directly into one nostril and the other half into the other nos-tril, avoid contact of the medication with the eyes; discard the tube after using; press the sides of the nose together and gent y massage after application to spread the ointment through-out the inside of the nostrils; and discontinue using Bactroban Nasal and call a health care practitioner if sensitization or severe local irritation occurs.

Drug Interactions: The effect of the concurrent application of intranasal mupirocin calcium and other intranasal products has not been studied. Do not apply mupirocin calcium ointment, 2% concurrently with any other intranasal products.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Long-term studies in animals to evaluate carcinogenic poten-tial of mupirocin calcium have not been conducted. Results of tial of mupirocin calcium have not been conducted. Results of the following studies performed with mupirocin calcium or mupirocin sodium *in vitro* and *in vivo* did not indicate a poten-tial for mutagenicity: rat primary hepatocyte unscheduled DNA synthesis, sediment analysis for DNA strand breaks, *Salmo-nella* reversion test (Ames), *Escherichia coli* mutation assay, metaphase analysis of human lymphocytes, mouse lym-phoma assay, and bone marrow micronuclei assay in mice. Reproduction studies were performed in rats with mupirocin administered subcutaneously at doses up to **40** times the human intranasal dose (approximately 20 mg mupirocin per day) on a mg/m² basis and revealed no evidence of impaired fertility from mupirocin sodium.

fertility from mupirocin sodium. **Pregnancy: Teratogenic Effects. Pregnancy Category B.** Reproduction studies have been performed in rats and rabbits with mupirocin administered subcutaneously at doses up to 65 and 130 times, respectively, the human intranasal dose (approximately 20 mg mupirocin per day) on a mg/m² basis and revealed no evidence of harm to the fetus due to mupiro-cin. There are, however, no adequate and well-controlled stud-ies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed. **Nursing Metham:** this out how whather this drup is averat.

Nursing Mothers: It is not known whether this drug is excret-ed in human milk. Because many drugs are excreted in human milk, exercise caution when *Bactroban* Nasal is administered to a nursing woman

Pediatric Use: Safety in children under the age of 12 years has not been established. (See CLINICAL PHARMACOLOGY in complete prescribing information.)

ADVERSE REACTIONS

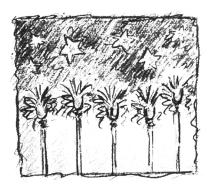
ADVERSE REACTIONS Clinical Trials: In clinical trials, 210 domestic and 2,130 foreign adult subjects/patients received Bactroban Nasal oint-ment. Less than 1% of domestic or foreign subjects and patients in clinical trials were withdrawn due to adverse events. In domestic clinical trials, 17% (36/210) of adults treat-ed with Bactroban Nasal ointment reported adverse events thought to be at least possibly drug-related. The incidence of adverse events that were reported in at least 1% of adults enrolled in domestic clinical trials vere as follows: headache, 9%; rhinitis, 6%; respiratory disorder, including upper respira-tory tract congestion, 5%; pharyngitis, 4%; taste perversion, 3%; burning/stinging, 2%; cough, 2%; and pruritus, 1%.

The following events thought possibly drug-related were reported in less than 1% of adults enrolled in domestic clinical trials blepharitis, diarrhea, dry mouth, ear pain, epistaxis, nau-sea and rash. All adequate and well-controlled clinical trials have been performed using *Bactroban* Nasal ointment, 2% in one arm and the vehicle ointment in the other arm of the study.

OVERDOSAGE

Nasal to adults, no evidence for systemic absorption of mupirocin was obtained.

Manufactured by DPT Laboratories, San Antonio, TX 78215 Distributed by SmithKline Beecham Pharmaceuticals, Philadelphia, PA 19101 BRS-BN:L3



CENTRAL STERILE PROCESSING MANAGER



Eisenhower Medical Center is looking for a dynamic, innovative, self-motivated individual to coordinate the CSP Services in a growing organization comprised of inpatient and outpatient services. This winter, CS is moving into a new surgical pavillion. Presently, we are working toward a combined

perpetual inventory based case cart and central distribution system. We are seeking either an experienced OR/CS Registered Nurse or an experienced Central Service Manager who is currently certified. This individual must be able to ensure that all standard CS procedures are consistent with the national standards and guidelines for CSP (AORN/AAMI/CDC).

Situated on a 100-acre campus located near Palm Springs, Eisenhower Medical Center is a dynamic, progressive health care complex comprised of a 261-bed hospital, the Annenberg Center for Health Sciences, the Barbara Sinatra Children's Center, and the Betty Ford Center. A not-for-profit corporation, this multi-faceted institution represents high quality health care for the residents of and visitors to the desert resort communities and provides a full range of educational services for the public and health care professionals.

In addition to professional opportunity, we offer a generous benefit package including relocation reimbursement, a competitive salary, and a beautiful environment in which to live and play. If interested, please send resume to: Human Resources, Eisenhower Medical Center, 39000 Bob Hope Drive, Rancho Mirage, CA. 92270. Or call to request an employment application: (760) 773-1356.



EISENHOWER MEDICAL CENTER

Visit our website at www.emc.org

FOF

First in Safety

ith their hands, caregivers express their thoughts, construct their dreams, and comfort the sick. And with their hands, caregivers deliver health using medical devices that can also inadvertently injure.

For years, caregivers have been able to place their protection in the experienced hands of BD. We have the *most* safety-engineered products, the most customers, the most conversions, the most educational programs and the most influence on the process of safety. At BD, we put safety first.

Practical Innovation, Sensible Solutions With more than 65 years of providing safetyengineered devices, educational services and value programs designed to help prevent occupational injury, BD is truly **First in Safety**.



Vol. 20 No. 11

EDITORIAL OFFICES Vanderbilt University School of Medicine A-1131 Medical Center North Nashville, TN 37232-2637 (615) 343-1095; (615) 343-1882 (FAX) Email: iche@mcmail.vanderbilt.edu EDITOR Michael D. Decker, MD, MPH MANAGING EDITOR Susan Cantrell STATISTICAL EDITOR Beverly G. Mellen, PhD 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 Bryan P. Simmons, MD Stephen B. Kritchevsky, PhD Memphis, Tennessee Wing Hong Seto, MD Hong Kong **Disinfection and Sterilization** William A. Rutala, PhD, MPH Chapel Hill, North Carolina **Emerging Infectious Diseases** Larry J. Strausbaugh, MD Portland, Oregon Robert W. Pinner, MD Atlanta, Georgia From the Laboratory Marcus Zervos, MD Royal Oak, Michigan Fred C. Tenover, PhD Atlanta, Georgia Information Management John A. Sellick, DO Buffalo, New York The International Perspective Mary D. Nettleman, MD, MS Richmond, Virginia **Issues in Surgery** James T. Lee, MD, PhD St. Paul, Minnesota Modical No

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY[®]

EDITORIAL ADVISORY BOARD

Jacques F. Acar, MD J. Wesley Alexander, MD Paul Arnow, MD Graham A.J. Ayliffe, MD Neil L. Barg, MD Elizabeth Ann Bolyard, RN, MPH, CIC John M. Boyce, MD Professor Dr. Ilja Braveny Christian Brun-Buisson, MD Charles Bryan, MD Donald E. Craven, MD Sue Crow, MSN, RN, CIC Franz Daschner, MD Leigh G. Donowitz, MD Charles E. Edmiston, Jr., PhD Theodore C. Eickhoff, MD Bruce Farber, MD Victoria J. Fraser, MD Peter C. Fuchs, MD, PhD Richard A. Garibaldi, MD Robert Gaynes, MD Velvl Greene, PhD, MPH David W. Gregory, MD David K. Henderson, MD Peter N.R. Heseltine, MD Karen Hoffmann, RN, CIC, MS Marguerite McMillan Jackson, RN, PhD Janine Jagger, MPH, PhD William R. Jarvis, MD Douglas S. Kernodle, MD Robert H. Latham, MD Lewis B. Lefkowitz, MD Hsieh-Shong Leu, MD, MSc Jack Levy, MD Victor Lorian, MD Dennis G. Maki, MD William J. Martone, MD Allison McGeer, MD John E. McGowan, Jr., MD Jonathan L. Meakins, MD, DSc Raf Mertens, MD Robert R. Muder, MD Joseph M. Mylotte, MD, CIC Lindsay Nicolle, MD Juhani Ojajärvi, MD Michael T. Osterholm, PhD, MPH Ian Evans Patterson MD

Paris, France Cincinnati, Ohio Chicago, Illinois Birmingham, United Kingdom Yakima, Washington Atlanta, Georgia Providence, Rhode Island Munich, Federal Republic of Germany Creteil, France Columbia, South Carolina Boston, Massachusetts Shreveport, Louisiana Freiburg, Federal Republic of Germany Charlottesville, Virginia Milwaukee, Wisconsin Denver, Colorado Manhasset, New York St. Louis, Missouri Black Butte, Oregon Farmington, Connecticut Atlanta, Georgia Beer Sheva, Israel Nashville, Tennessee Bethesda, Maryland Los Angeles, California Chapel Hill, North Carolina San Diego, California Charlottesville, Virginia Atlanta, Georgia Nashville, Tennessee Nashville, Tennessee Nashville, Tennessee Taipei, Taiwan Brussels, Belgium Bronx, New York Madison, Wisconsin Bethesda, Maryland Toronto, Ontario, Canada Atlanta, Georgia Montreal, Quebec, Canada Brussels, Belgium Pittsburgh, Pennsylvania Buffalo, New York Winnepeg, Manitoba, Canada Helsinki, Finland Minneapolis, Minnesota San Antonio Texa

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY®

CONTENTS

Continued from cover

TOPICS IN LONG-TERM CARE Infection Control Programs in Long-Term–Care Facilities: Structure and Process Barbara A. Goldrick, RN, PhD	764
INFORMATION MANAGEMENT staffTRAK-TB: Software for Surveillance of Tuberculosis Infection in Healthcare Workers Dale R. Burwen, MD, MPH; M. Franklin Seawright, BS	770
Satellite Videoconferencing for Healthcare Workers: Audience Characteristics and the Importance of Continuing Education Credits II-Lun Chen, MD; Joseph N. Eckhardt, MPH; Ronda L. SINKOWTIZ-COCHRAN, MPH; WILLIAM R. JARVIS, MD	778
MEDICAL NEWS Gina Pugliese, RN, MS; Martin S. Favero, PhD	781
SHEA NEWS Andreas Voss, MD, PhD	784

To view abstracts of these articles,
visit us on the Internet at http://www.slackinc.com/general/iche

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-0899-823X, Canadian GST#129780466) is published exclusively by SLACK Incorporated 12 times a year. Address: 6900 Grove Rd., Thorofare, NJ 08086. Telephone: (856) 848-1000.

SHEA: 19 Mantua Rd., Mt. Royal, NJ 08061; telephone, 856423-0087; fax, 856423-3420; e-mail address, sheahq@talley.com.

COPYRIGHT 1999 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 (except Japan). In Japan, contact Woodbell Incorporated, 4-22-11, Kitakasai, Edogawaku, Tokyo 134, Japan. Subscription rates in the United States and possessions: Individual: One year-\$105.00; Two year-\$143.00; Three year-\$176.00; Institutional: One year-\$128.00; Two year-\$178.00; Three year-\$228.00. Fellows: \$52.50 per year with proof of training status. Canada: \$20.00 additional each year plus 7% for Canadian Goods & Services tax; Overseas surface, \$145.00 each year; Overseas air mail, \$190.00. Single copies of current issues may be obtained for \$15.00, United States and possessions; \$20.00 all other countries.

INSTRUCTIONS TO AUTHORS: Authors may submit manuscripts prepared in accordance with the 1997 revision of the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals." The Uniform Requirements has been published in several journals, including Infect Control Hosp Epidemiol 1997;18:457464 and Ann Intern Med 1997;126:3647. A digital version is available on our web site (http://www.slackinc.com/general/iche/ichehome.htm). Submit to ICHE Editorial Offices, Vanderbilt University School of Medicine, A-1131 Medical Center North, Nashville, TN 37232-2637, USA. All submissions must be accompanied by copyright form(s) signed by all authors (see January issue or our web site).

REPRINTS: All requests to reprint or use material published herein should be addressed to Karen Lambertson, SLACK Incorporated, 6900 Grove Rd., Thorofare, NJ 08086. For reprint orders and prices, contact Karen Lambertson 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 \$.15 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, MA 01970. This consent does not extend to other kinds of copy-ing, 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 Rd., 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.

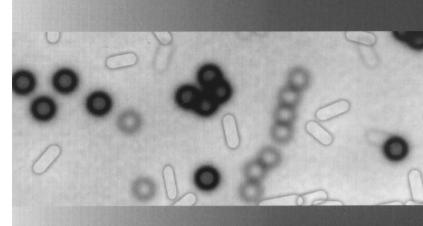
more information contact:

h Decennial Conference on Nosocomial d Healthcare-Associated Infections

20 Montrose Road ontrose Professional Park okville, MD 20852 I. (301) 984-9450 IX (301) 984-9441 mail info@decennial.org ernet www.decennial.org

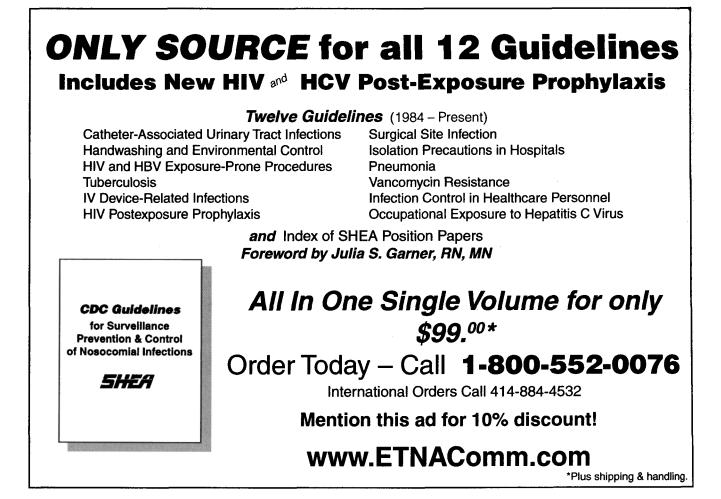
Sponsored by:





4 TH DECENNNIAL International Conference on Nosocomial and Healthcare-Associated Infections

5#	SOCIETY FOR HEALTHCARE EPIDEMIOLOGY OF AMERICA
SHEA	SATELLITE EDUCATION WORKSHOPS Hyatt Regency - Atlanta, Georgia Saturday, March 4, 2000
Immediat	ely preceding the 4th Decennial International Conference on Nosocomial and Healthcare Associated Infections
Workshop #1	Bioterrorism: Thinking Globally and Preparing Locally
Workshop #2	Immunizations for Health Care Workers: Preventing the Preventable
Workshop #3	Methicillin Resistant Staphylococcus Aureus: Prevention, Control, and Treatment Issues
Workshop #4	Developing Infection Control and Health Care Epidemiology in the International Setting
Workshop #5	Building Data Driven Intervention Teams: A Model for Change in Infection Control
Workshop #6	Practical Approaches to Improving Hand Hygiene
	ence workshops run concurrently. The fee for each workshop is \$150.00. 1 closes on February 4, 2000.
For more in	nformation: SHEA Meetings Dept., 19 Mantua Road, Mt. Royal, NJ 08061 Tel: 856-423-7222, ext. 350 Fax: 856-423-3420



Reducing the incidence of nosocomial UTI