

INFECTION CONTROL^{AND}

HOSPITAL EPIDEMIOLOGY

Volume 11, Number 11 • November 1990

EDITORIAL

- Improving Antibiotic Use Has Become Essential—Can Surgery Lead the Way?** 575

John E. McGowan, Jr., MD

ORIGINAL ARTICLES

- Changing Surgical Antimicrobial Prophylaxis Practices Through Education Targeted at Senior Department Leaders** 578

Daniel E. Everitt, MD; Stephen B. Soumerai, ScD;
Jerry Avorn, MD; Henry Klapholz, MD;
Michael Wessels, MD

- Estimated Cost of Needlestick Injuries for Six Major Needled Devices** 584

Janine Jagger, PhD, MPH; Ella H. Hunt, RN;
Richard D. Pearson, MD

- The Role of Handwashing in Prevention of Endemic Intensive Care Unit Infections** 589

Bryan Simmons, MD; Jerri Bryant, RN, MPH;
Kim Neiman, RN, MPH; Linda Spencer, RN, PhD;
Kris Arheart, MS

- Importance of Neutralizers in the Stripping Fluid in a Simulated Healthcare Personnel Handwash** 595

Lee Benson; Lee Bush, PhD; Destin LeBlanc

TOPICS IN LONG-TERM CARE

- Methicillin-Resistant Staphylococcus aureus in Long-Term Care Facilities** 600

Carol A. Kauffman, MD; Suzanne F. Bradley, MD;
Margaret S. Terpenning, MD

PRODUCT COMMENTARY

- Evaluating the Sterility of Disposable Wall Oxygen Humidifiers, During and Between Use on Patients** 604

W.H. Seto, MD; T.Y. Ching, RN; K.Y. Yuen, MD;
W.K. Lam, MD

EMPORIATRICS

- Emporiatics: Diarrhea in Travelers** 606

Timothy H. Holtz, MPH; Mary D. Nettleman, MD

LETTERS TO THE EDITOR

- Clostridium difficile-Associated Diarrhea** 574

S. Brooks, PhD; R. Real
M. Adachi, MD, ScD
AAS; M. Kramer, MD;

SHEA NEWSLETTER

611

From SmithKline Biologicals



Hepatitis B Vaccine (Recombinant)

Choice of dosing regimens

Alternate 0, 1, 2 month dosing regimen for certain populations*

20 mcg recombinant dose

Helps to ensure immune response in adult patients of all ages

	Engerix-B®	Recombivax HB®†
Adult dose (mcg)	20	10
Standard dosing regimen (0, 1 and 6 months)	✓	✓
Alternate 0, 1, 2 month dosing regimen for certain populations*	✓	
Published efficacy data: Neonates born of infected mothers'	✓	✓
VACTRAC™—computer software for vaccination tracking and compliance	✓	
Bar-coded, unit-dose vials	✓	
Lowest cost per dose ²	✓	

*For those recently exposed to the virus (including needlestick exposure), certain travelers to high-risk areas and neonates born of infected mothers. When prolonged maintenance of protective antibody titers is desired, a booster dose at month 12 is recommended.

Lowest Cost Per Dose²

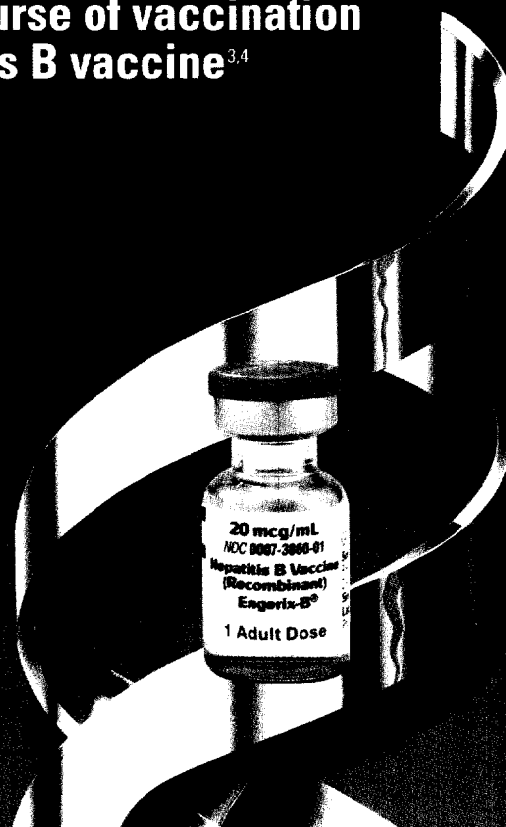
Extensively tested and well tolerated[‡]

State-of-the-art recombinant technology

14 million doses distributed in over 87 countries³

Switch to Engerix-B*

Can be used to complete a course of vaccination initiated with another hepatitis B vaccine^{3,4}



[†]Hepatitis B Vaccine (Recombinant), MSD.

[‡]Please see brief summary of prescribing information on adjacent page for a complete listing of adverse reactions, contraindications, warnings and precautions.

©SmithKline Beecham, 1990

Engerix-B®

Hepatitis B Vaccine (Recombinant)

See complete prescribing information in SK&F literature or PDR. The following is a brief summary.

INDICATIONS AND USAGE: 'Engerix-B' is indicated for immunization against infection caused by all known subtypes of hepatitis B virus. Immunization is recommended in persons of all ages, especially those who are, or will be, at increased risk of exposure to hepatitis B virus.

CONTRAINDICATIONS: Hypersensitivity to yeast or any other component of the vaccine is a contraindication for use of the vaccine.

WARNINGS: Do not give additional injections to patients experiencing hypersensitivity after an 'Engerix-B' injection (See CONTRAINDICATIONS.)

Hepatitis B has a long incubation period. Hepatitis B vaccination may not prevent hepatitis B infection in individuals who had an unrecognized hepatitis B infection at the time of vaccine administration. Additionally, it may not prevent infection in individuals who do not achieve protective antibody titers.

PRECAUTIONS: General: As with any percutaneous vaccine, keep epinephrine available for use in case of anaphylaxis or anaphylactoid reaction.

As with any vaccine, delay administration, if possible, in persons with any febrile illness or active infection.

Pregnancy: Pregnancy Category C: Animal reproduction studies have not been conducted with 'Engerix-B'. It is also not known whether 'Engerix-B' can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Give 'Engerix-B' to a pregnant woman only if clearly needed.

Nursing Mothers: It is not known whether 'Engerix-B' is excreted in human milk. Because many drugs are excreted in human milk, use caution when giving 'Engerix-B' to a nursing woman.

Pediatric Use: 'Engerix-B' has been shown to be well tolerated and highly immunogenic in infants and children of all ages. Newborns also respond well; maternally transferred antibodies do not interfere with the active immune response to the vaccine.

ADVERSE REACTIONS: 'Engerix-B' is generally well tolerated. During clinical studies involving over 10% individuals distributed over all age groups, no serious adverse reactions attributable to vaccine administration were reported. As with any vaccine, however, it is possible that expanded commercial use of the vaccine could reveal adverse reactions not observed in clinical studies.

Ten double-blind studies involving 2,252 subjects showed no significant difference in the frequency or severity of adverse experiences between 'Engerix-B' and plasma-derived vaccines. In 36 clinical studies a total of 13,495 doses of 'Engerix-B' were administered to 5,071 healthy adults and children who were initially seronegative for hepatitis B markers, and healthy neonates. All subjects were monitored for 4 days post-administration. Frequency of adverse experiences tended to decrease with successive doses of 'Engerix-B'. Using a symptom checklist, the most frequently reported adverse reactions were injection site soreness (22.9%) and fatigue* (14%). Other reactions are listed below.

Incidence 1% to 10% of injections: Induration; erythema; swelling; fever ($>37.5^{\circ}\text{C}$); headache†, dizziness.

*Parent or guardian completed forms for children and neonates. Neonatal checklist did not include headache, fatigue or dizziness.

Incidence <1% of injections: Pain; pruritus; ecchymosis; sweating; malaise; chills; weakness; flushing; tingling; hypotension; influenza-like symptoms; upper respiratory tract illnesses; nausea; anorexia; abdominal pain; cramps; vomiting; constipation; diarrhea; lymphadenopathy; pain/stiffness in arm, shoulder or neck; arthralgia; myalgia; back pain; rash; urticaria; petechiae; erythema; somnolence; insomnia; irritability; agitation.

Additional adverse experiences have been reported with the commercial use of 'Engerix-B' outside the United States. Those listed below are to serve as alerting information to physicians: Anaphylaxis; erythema multiforme including Stevens-Johnson syndrome; angioedema; arthritis; tachycardia/palpitations; bronchospasm including asthma-like symptoms; abnormal liver function tests; migraine; syncope; paresis; neuropathy including hypoesthesia, paresthesia, Guillain-Barré syndrome and Bell's palsy; transverse myelitis; thrombocytopenia; eczema; purpura; herpes zoster; vertigo; conjunctivitis; keratitis; visual disturbances.

Potential Adverse Experiences: In addition, certain other adverse experiences not observed with 'Engerix-B' have been reported with Hepavax-B®† and/or Recombivax HB®‡. Those listed below are to serve as alerting information to physicians: Optic neuritis.

HOW SUPPLIED: 20 mcg/mL in Single-Dose Vials in packages of 1, 10 and 25 vials.

NDC 0007-3860-01 (package of 11)
NDC 0007-3860-11 (package of 10)
NDC 0007-3860-16 (package of 25)

10 mcg/0.5 mL in Single-Dose Vials in packages of 1 vial
NDC 0007-3859-01 (package of 1)

† plasma-derived, Hepatitis B Vaccine, MSD
‡ yeast-derived, Hepatitis B Vaccine, MSD.

Manufactured by **SmithKline Biologicals**, Rixensart, Belgium
Distributed by **SmithKline & French Laboratories**
Division of SmithKline Beckman Corp., Philadelphia, PA 19101

Date of Issuance Aug. 1989

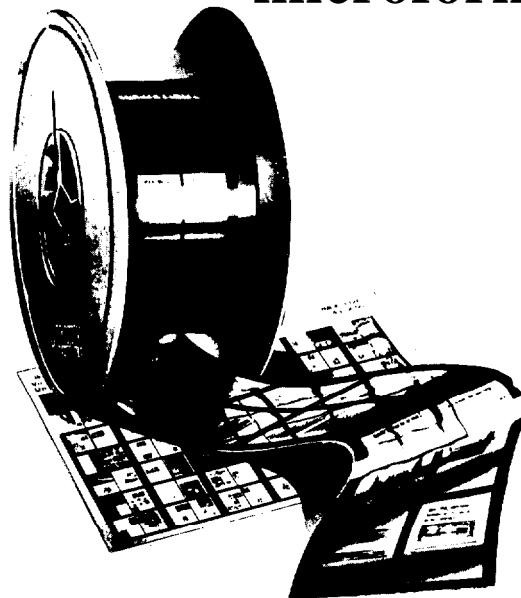
BRS—EB:16

Engerix-B is a registered trademark of SmithKline Beecham.

References:

1. Poovorawan Y, Sanpavat S, Pongnuntlert W, et al: Protective efficacy of a recombinant DNA hepatitis B vaccine in neonates of HBe antigen-positive mothers. *JAMA* 1989; 261(22):3278-3281.
2. Based on Medi-Span® Hospital Formulary Pricing Guide, December 1989.
3. Data on file, SK&F.
4. Bush L, Moonsammy G, Boscia I: Evaluation of initiating a hepatitis B vaccination schedule with one vaccine and completing it with another. *Hepatology* 1989; 10:689.

This publication is available in microform.



University Microfilms

International reproduces this publication in microform: microfiche and 16mm or 35mm film. For information about this publication or any of the more than 13,000 titles we offer, complete and mail the coupon to: University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106. Call us toll-free for an immediate response: 800-521-3044. Or call collect in Michigan, Alaska and Hawaii: 313-761-4700.

☐ Please send information about these titles:

Name _____

Company/Institution _____

Address _____

City _____

State _____ Zip _____

Phone (____) _____

University
Microfilms
International

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY

EDITORIAL	Improving Antibiotic Use Has Become Essential- Can Surgery Lead the Way?	575
	John E. McGowan, Jr., MD	
ORIGINAL ARTICLES	Changing Surgical Antimicrobial Prophylaxis Practices Through Education Targeted at Senior Department Leaders	578
	Daniel E. Everitt, MD; Stephen B. Soumerai, ScD; Jerry Avorn, MD; Henry Klapholz, MD; Michael Wessels, MD	
	Estimated Cost of Needlestick Injuries for Six Major Needed Devices	584
	Janine Jagger, PhD, MPH; Ella H. Hunt, RN; Richard D. Pearson, MD	
	The Role of Handwashing in Prevention of Endemic Intensive Care Unit Infections	589
	Bryan Simmons, MD; Jerri Bryant, RN, MPH; Kim Neiman, RN, MPH; Linda Spencer, RN, PhD; Kris Arheart, MS	
	Importance of Neutralizers in the Stripping Fluid in a Simulated Healthcare Personnel Handwash	595
	Lee Benson; Lee Bush, PhD; Destin LeBlanc	
SPECIAL SECTIONS	Topics in Long-Term Care Methicillin-Resistant <i>Staphylococcus aureus</i> in Long-Term Care Facilities	600
	Carol A. Kauffman, MD; Suzanne F. Bradley, MD; Margaret S. Terpenning, MD	
	Product Commentary Evaluating the Sterility of Disposable Wall Oxygen Humidifiers, During and Between Use on Patients	604
	W.H. Seto, MD; T.Y. Ching, RN; K.Y. Yuen, MD; W.K. Lam, MD	
	Emporiatics Emporiatics: Diarrhea in Travelers	606
	Timothy H. Holtz, MPH; Mary D. Nettleman, MD	
DEPARTMENTS	Letters to the Editor	574
	<i>SHEA Newsletter</i>	611
	Information for Authors	614
	Calendar of Events	615
	Classified Marketplace	616

**The ideas and opinions expressed by contributing authors do not
necessarily reflect those of the editors or publisher.**

Publisher: Infection Control and Hospital Epidemiology (ISSN-0899-823X) is published monthly by SLACK Incorporated, 6900 Grove Road, Thorofare, New Jersey 08086 Telephone (609) 848-1000.

Copyright 1990: All rights reserved No part of this publication may be reproduced without written permission from the publisher

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 US and possessions: Individual: One year—\$70 00; Two years—\$105 00; Three years—\$135 00 Institutional One year—\$80 00; Two years—\$120 00; Three years—\$160 00. Canada, \$18 00 additional each year, all other countries \$36 00 additional each year. Single copies of current issues may be obtained for \$8 00, United States and possessions, \$16 00 all other countries.

Reprints: All requests to reprint or use material published herein should be addressed to Lester J. Robeson, SLACK Incorporated, 6900 Grove Road, Thorofare, NJ 08086 For reprint orders and prices, contact Fran Micaletti at (609) 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 Street, Salem, MA 01970 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 six weeks in advance of effective date Include old and new addresses with ZIP codes. The publisher cannot accept responsibility for undelivered copies Second-class postage is paid at Thorofare, New Jersey 08086, and additional entry points Postmaster: Send address changes to SLACK Incorporated, 6900 Grove Road, Thorofare, NJ 08066

As of Volume 1, Number 1, INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY is listed in Index Medicus, Current Contents—Clinical Practice, Hospital Literature Index, Cumulative Index to Nursing and Allied Health Literature, and Nursing Abstracts.

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

Medical News

Gina Pugliese, RN, MS

Chicago, Illinois

Martin S. Favero, PhD

Irvine, California

Practical Healthcare Epidemiology

Loreen A. Herwaldt, MD

Iowa City, Iowa

SHEA News

Murray D. Batt, MD

Clarksburg, West Virginia

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

Jacques F. Acar, MD	Paris, France
J. Wesley Alexander, MD	Cincinnati, Ohio
Paul Arnow, MD	Chicago, Illinois
Graham A.J. Ayliffe, MD	Birmingham, United Kingdom
Neil L. Barg, MD	Yakima, Washington
Elizabeth Ann Bolyard, RN, MPH, CIC	Atlanta, Georgia
John M. Boyce, MD	Providence, Rhode Island
Professor Dr. Ilja Braveny	Munich, Federal Republic of Germany
Charles Bryan, MD	Columbia, South Carolina
Christian Brun-Buisson, MD	Creteil, France
Donald E. Craven, MD	Boston, Massachusetts
Sue Crow, MSN, RN, CIC	Shreveport, Louisiana
Franz Daschner, MD	Freiburg, Federal Republic of Germany
Leigh G. Donowitz, MD	Charlottesville, Virginia
Charles E. Edmiston, Jr., PhD	Milwaukee, Wisconsin
Theodore C. Eickhoff, MD	Denver, Colorado
Bruce Farber, MD	Manhasset, New York
Victoria J. Fraser, MD	St. Louis, Missouri
Peter C. Fuchs, MD, PhD	Black Butte, Oregon
Richard A. Garibaldi, MD	Farmington, Connecticut
Velvl Greene, PhD, MPH	Beer Sheva, Israel
Robert Gaynes, MD	Atlanta, Georgia
David W. Gregory, MD	Nashville, Tennessee
David K. Henderson, MD	Bethesda, Maryland
Peter N.R. Heseltine, MD	Los Angeles, California
Karen Hoffmann, RN, CIC, MS	Chapel Hill, North Carolina
Marguerite McMillan Jackson, RN, PhD	San Diego, California
Janine Jagger, MPH, PhD	Charlottesville, Virginia
William R. Jarvis, MD	Atlanta, Georgia
Douglas S. Kernodle, MD	Nashville, Tennessee
Robert H. Latham, MD	Nashville, Tennessee
Lewis B. Lefkowitz, MD	Nashville, Tennessee
Hsieh-Shong Leu, MD, MSc	Taipei, Taiwan
Jack Levy, MD	Brussels, Belgium
Victor Lorian, MD	Bronx, New York
Dennis G. Maki, MD	Madison, Wisconsin
Professor Dr. Walter Marget	Munich, Federal Republic of Germany
William J. Martone, MD	Bethesda, Maryland
Allison McGeer, MD	Toronto, Ontario, Canada
John E. McGowan, Jr., MD	Atlanta, Georgia
Jonathan L. Meakins, MD, DSc	Montreal, Quebec, Canada
Raf Mertens, MD	Brussels, Belgium
Robert R. Muder, MD	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
Jan Evans Patterson, MD	San Antonio, Texas
Sindy M. Paul, MD	Trenton, New Jersey
Michael A. Pfaller, MD	Iowa City, Iowa
Samuel Ponce de Leon, MD, MSc	Mexico City, Mexico
Isaam Raad, MD	Houston, Texas
Manfred L. Rotter, MD, DipBact	Vienna, Austria
Theodore Sacks, MD	Jerusalem, Israel
William E. Scheckler, MD	Madison, Wisconsin
Kent Sepkowitz, MD	New York City, New York
Denis Spelman, MD	Prahran Victoria, Australia
Michael L. Tapper, MD	New York, New York
Clyde Thornsberry, PhD	Brentwood, Tennessee
Professor Leonid P. Titov	Minsk, Republic of Belarus
Timothy R. Townsend, MD	Millwood, Virginia
Antoni Trilla, MD, PhD	Barcelona, Spain
Professor Wang Shu-Qun	Beijing, People's Republic of China
J. John Weems, Jr., MD	Greenville, South Carolina
Robert A. Weinstein, MD	Chicago, Illinois
Professor Dr. W. Weuffen	Greifswald, Federal Republic of Germany
Sergio B. Wey, MD	São Paulo, Brazil
Rebecca Wurtz, MD	Evanston, Illinois

SLACK Incorporated

6900 Grove Road
Thorofare, New Jersey 08086
(609) 848-1000

Vice President/Group Publisher

Richard N. Roash

Publisher

John C. Carter

Editorial Director

Jennifer Kilpatrick

Production Editor

Shirley P. Strunk, ELS

Assistant Editor

Eileen C. Anderer

Circulation Manager

Lester J. Robeson, CCCP

Production Director

Christine Malin

Production Coordinator

Joanne Patterson

Publishing Director/ Advertising

Wayne McCourt

Pharmaceutical Group Sales Director

Michael LoPresti

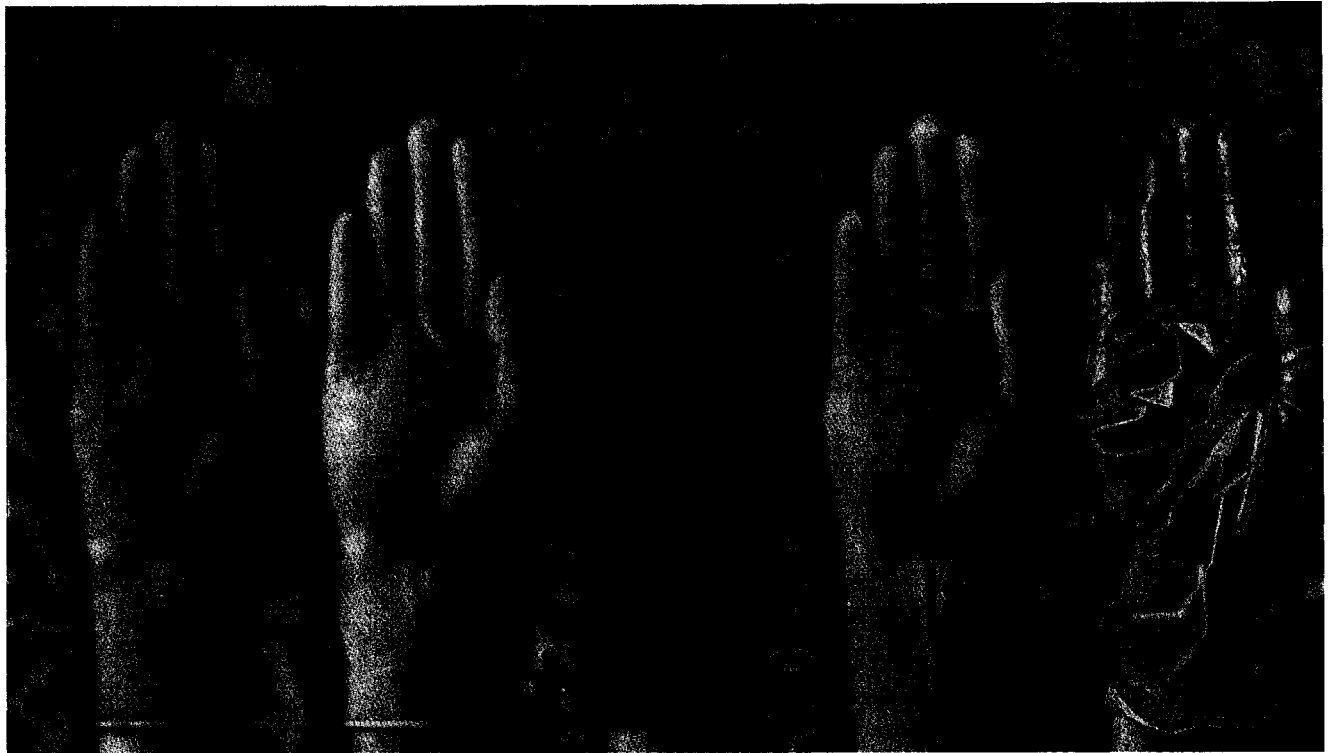
Advertising Sales Representative

Jennine Kane

Classified/Recruitment Sales Manager

Michele Burch

Protection is our line.



Artist interpretation of microorganisms.



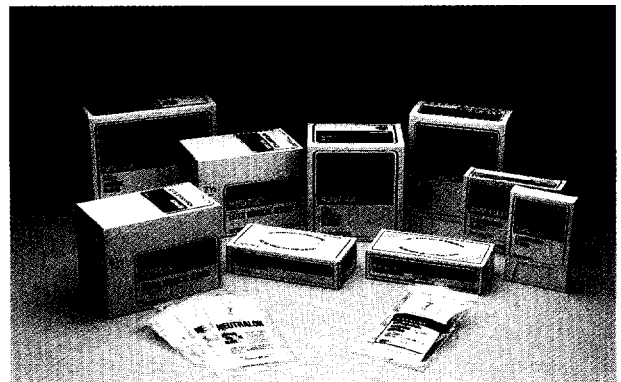
rotection. The key to our superior glove line. At Johnson & Johnson Medical, Inc., we have a reputation that spans more than 20 years — years dedicated to the research and development of quality gloves that provide maximum protection, optimum fit and excellent touch sensitivity.

We engineer quality into every aspect of our gloves beginning with 100 percent on-line visual inspection of all latex gloves, and quality standards that far exceed those recommended by the FDA.

Our protective lines include NEUTRALON® Brown Surgical Gloves, MICRO-TOUCH™ Latex Surgical Gloves, MICRO-TOUCH™ Latex Medical Gloves, DISPOS-A-GLOVE™ Examination Gloves and both the new MAXXUS™ Orthopaedic Surgical Gloves, and the longer cuff MICRO-TOUCH™ XI™ Latex Medical Gloves.

Protection and Johnson & Johnson Medical, Inc. — an unbeatable combination.

For more information, contact your Johnson & Johnson Medical, Inc., Medical Specialties Sales Representative or call 1-800-433-5009.



Johnson & Johnson
MEDICAL INC.

*TRADEMARK © JJM, INC 1990