

INFECTION CONTROL^{AND}

HOSPITAL EPIDEMIOLOGY

Volume 11, Number 2 • February 1990

EDITORIAL

Handwashing: Are Experimental Models a Substitute for Clinical Trials? Two Viewpoints

Elaine Larson, PhD, RN, FAAN, CIC;
M.L. Rotter, MD

63

ORIGINAL ARTICLES

The Effects of Surfactant Systems and Moisturizing Products on the Residual Activity of a Chlorhexidine Gluconate Handwash Using a Pigskin Substrate

Lee Benson, BS; Destin LeBlanc, BS;
Lee Bush, PhD; John White, BS

67

Clinical Predictors of Infection of Central Venous Catheters Used for Total Parenteral Nutrition

Carl W. Armstrong, MD; C. Glen Mayhall, MD;
Kathy B. Miller, RN, MS;
Heber H. Newsome, Jr., MD;
Harvey J. Sugerman, MD;
Harry P Dalton, PhD; Gaye O. Hall;
Sally Hunsberger

71

Disinfection of Water Distribution Systems for Legionella: A Review of Application Procedures and Methodologies

Paul W. Muraca, MS; Victor L. Yu, MD;
Angella Goetz, RN, MNEd

79

Hospital Reimbursement Patterns Among Patients With Surgical Wound Infections Following Open Heart Surgery

John M. Boyce, MD; Gail Potter-Bynoe, BS;
Linda Dziobek, RN

89

PRODUCT COMMENTARY

The Disinfectant Dilemma Revisited

Inge Gurevich, RN, MA;
Barbara Yannelli, RN, BS;
Burke A. Cunha, MD

96

TOPICS IN CLINICAL MICROBIOLOGY

Pseudomonas aeruginosa Revisited

Charles W. Stratton, MD

101

LETTERS TO THE EDITOR

Prevalence of Viral Hepatitis B Surface Antigen Among Syphilitic Patients: A Serological Screening Survey

A.A. Abood, MD; A. Najim; A. Kadum;
A.A. Ali Ghalib

61

SHEA NEWSLETTER

105



**Value the Experience,
Experience the Value**

Value the Experience

- . Over 2.6 million doses distributed in the United States
- . In clinical trials, three 10-mcg doses induced protective levels of antibodies in 96% of healthy adults
- . Contains no detectable yeast DNA and not more than 1% yeast protein
- . Generally well tolerated in over three years of clinical use

Experience the Value

- Innovative services to help support your vaccination program
- . Wide range of doses includes 40-mcg/mL Dialysis Formulation
- . Now a 2.5-mcg pediatric dose may reduce vaccine costs by 50%
- Available in convenient multidose vials direct from MSD



Recombivax HB[®]

(Hepatitis B Vaccine [Recombinant] 1 MSD)

RECOMBIVAX HB is contraindicated in the presence of hypersensitivity to yeast or to any component of the vaccine.

Please see the following page for a Brief Summary of Prescribing Information for RECOMBIVAX HB.

Copyright © 1990 by MERCK & CO., Inc

MSD
MERCK
SHARP &
DOHME

Value the Experience, Experience the Value

Recombivax HB® (Hepatitis B Vaccine [Recombinant] | MSD)

INDICATIONS AND USAGE

RECOMBIVAX HB is indicated for vaccination against infection caused by all known subtypes of hepatitis B virus. RECOMBIVAX HB Dialysis Formulation is indicated for vaccination of adult predialysis and dialysis patients against infection caused by all known subtypes of hepatitis B virus.

Vaccination with RECOMBIVAX HB is recommended in persons of all ages who are or will be at increased risk of infection with hepatitis B virus. In areas with high prevalence of infection, most of the population are at risk of acquiring hepatitis B infection at a young age. Therefore, vaccination should be targeted to prevent such transmission. In areas of low prevalence, vaccination should be limited to those who are in groups identified as being at increased risk of infection.

CONTRAINDICATIONS

Hypersensitivity to yeast or any component of the vaccine.

WARNINGS

Patients who develop symptoms suggestive of hypersensitivity after an injection should not receive further injections of the vaccine (see CONTRAINDICATIONS).

Because of the long incubation period for hepatitis B, it is possible for unrecognized infection to be present at the time the vaccine is given. The vaccine may not prevent hepatitis B in such patients.

PRECAUTIONS

General

As with any percutaneous vaccine, epinephrine should be available for immediate use should an anaphylactoid reaction occur.

Any serious active infection is reason for delaying use of the vaccine except when, in the opinion of the physician, withholding the vaccine entails a greater risk.

Caution and appropriate care should be exercised in administering the vaccine to individuals with severely compromised cardiopulmonary status or to others in whom a febrile or systemic reaction could pose a significant risk.

Pregnancy

Pregnancy Category C. Animal reproduction studies have not been conducted with the vaccine. It is also not known whether the vaccine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. The vaccine should be given to a pregnant woman only if clearly needed.

Nursing Mothers

It is not known whether the vaccine is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when the vaccine is administered to a nursing woman.

Pediatric Use

RECOMBIVAX HB has been shown to be usually 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. See DOSAGE AND ADMINISTRATION for recommended pediatric dosage and for recommended dosage for infants born to HBsAg-positive mothers.

The safety and effectiveness of RECOMBIVAX HB Dialysis Formulation in children have not been established.

ADVERSE REACTIONS

RECOMBIVAX HB and RECOMBIVAX HB Dialysis Formulation are generally well tolerated. No serious adverse reactions attributable to the vaccine have been reported during the course of clinical trials. No adverse experiences were reported during clinical trials which could be related to changes in the titers of antibodies to yeast. As with any vaccine, there is the possibility that broad use of the vaccine could reveal adverse reactions not observed in clinical trials.

In a group of studies, 3,258 doses of RECOMBIVAX HB were administered to 1,252

RECOMBIVAX HB®

(Hepatitis B Vaccine [Recombinant], MSD)

healthy adults who were monitored for 5 days after each dose. Injection-site and systemic complaints were reported following 17% and 15% of the injections, respectively.

The following adverse reactions were reported:

Incidence Equal to or Greater Than
1% of Injections

LOCAL REACTION (INJECTION SITE)

Injection-site reactions consisting principally of soreness and including pain, tenderness, pruritus, erythema, ecchymosis, swelling, warmth, and nodule formation.

BODY AS A WHOLE

The most frequent systemic complaints include fatigue/weakness; headache; fever ($\geq 100^{\circ}\text{F}$); malaise.

DIGESTIVE SYSTEM

Nausea; diarrhea.

RESPIRATORY SYSTEM

Pharyngitis; upper respiratory infection.

Incidence Less Than 1% of Injections

BODY AS A WHOLE

Sweating; achiness; sensation of warmth; light-headedness; chills; flushings.

DIGESTIVE SYSTEM -

Vomiting; abdominal pains/cramps; dyspepsia; diminished appetite.

RESPIRATORY SYSTEM

Rhinitis; influenza; cough.

NERVOUS SYSTEM

Vertigo/dizziness; paresthesia.

INTEGUMENTARY SYSTEM

Pruritus; rash (non-specified); angioedema; urticaria.

MUSCULOSKELETAL SYSTEM

Arthralgia including monoarticular; myalgia; back pain; neck pain; shoulder pain; neck stiffness.

HEMIC/LYMPHATIC SYSTEM

Lymphadenopathy.

PSYCHIATRIC/BEHAVIORAL

Insomnia/disturbed sleep.

SPECIAL SENSES

Earache.

UROGENITAL SYSTEM

Dysuria.

CARDIOVASCULAR SYSTEM

Hypertension.

The following additional adverse reactions have been reported with use of the marketed vaccine. In many instances, the relationship to the vaccine was unclear.

Hypersensitivity: Anaphylaxis and symptoms of immediate hypersensitivity reactions including rash, pruritus, urticaria, edema, angioedema, dyspnea, chest discomfort, bronchial spasm, palpitation, or symptoms consistent with a hypotensive episode have been reported within the first few hours after vaccination. An apparent hypersensitivity syndrome (serum-sickness-like) of delayed onset has been reported days to weeks after vaccination, including arthralgia/arthritis (usually transient), fever, and dermatologic reactions such as urticaria, erythema multiforme, ecchymoses, and erythema nodosum (see WARNINGS and PRECAUTIONS).

Nervous System: Peripheral neuropathy including Bell's Palsy; muscle weakness; Guillain-Barré syndrome.

Special Senses: Optic neuritis.

Potential ADVERSE EFFECTS

In addition, a variety of adverse effects not observed in clinical trials with RECOMBIVAX HB or RECOMBIVAX HB Dialysis Formulation have been reported with HEPTAVAX-B® (Hepatitis B Vaccine, MSD) (plasma-derived hepatitis B vaccine). Those listed below are to serve as alerting information to physicians:

Nervous System: Neurological disorders such as myelitis including transverse myelitis; acute radiculoneuropathy; herpes zoster.

Hematologic: Thrombocytopenia.

Special Senses: Tinnitus; visual disturbances.

RECOMBIVAX HB®

(Hepatitis B Vaccine [Recombinant], MSD)

DOSAGE AND ADMINISTRATION

Do not inject intravenously or intradermally.

RECOMBIVAX HB DIALYSIS FORMULATION (40 mcg/mL) IS INTENDED ONLY FOR ADULT PREDIALYSIS/DIALYSIS PATIENTS.

RECOMBIVAX HB (10 mcg/mL) IS NOT INTENDED FOR USE IN PREDIALYSIS/DIALYSIS PATIENTS.

RECOMBIVAX HB and RECOMBIVAX HB Dialysis Formulation are for intramuscular injection. The *deltoid muscle* is the preferred site for intramuscular injection in adults. Data suggest that injections given in the buttocks are frequently given into fatty-tissue instead of into muscle. Such injections have resulted in a lower seroconversion rate than was expected. The *anterolateral thigh* is the recommended site for intramuscular injection in infants and young children.

For persons at risk of hemorrhage following intramuscular injection, RECOMBIVAX HB may be administered subcutaneously. However, when other aluminum-adsorbed vaccines have been administered subcutaneously, an increased incidence of local reactions including subcutaneous nodules has been observed. Therefore, subcutaneous administration should be used only in persons (e.g., hemophiliacs) who are at risk of hemorrhage following intramuscular injections.

The vaccine should be used as supplied; no dilution or reconstitution is necessary. The full recommended dose of the vaccine should be used.

The RECOMBIVAX HB vaccination regimen consists of 3 doses of vaccine. The volume of vaccine to be given on each occasion is as follows:

Age group	Initial	1 month	6 months
Birth* through 10 years of age	0.25 mL (2.5 mcg)	0.25 mL (2.5 mcg)	0.25 mL (2.5 mcg)
11-19 years of age	0.5 mL (5 mcg)	0.5 mL (5 mcg)	0.5 mL (5 mcg)
≥ 20 years	1 mL (10 mcg)	1 mL (10 mcg)	1 mL (10 mcg)

*Infants born of HBsAg-negative mothers.

The recommended RECOMBIVAX HB Dialysis Formulation vaccination regimen for predialysis/dialysis patients is as follows:

Group	Formulation	Initial	1 month	6 months
Predialysis and Dialysis Patients	Dialysis 40 mcg/mL	1 mL	1 mL	1 mL

Whenever revaccination or administration of a booster dose is appropriate, RECOMBIVAX HB may be used.

The recommended regimen for infants born of HBsAg-positive mothers is as follows:

	Birth	Within 7 days	1 month	6 months
RECOMBIVAX HB	0.5 mL (5 mcg)	0.5 mL (5 mcg)	0.5 mL (5 mcg)	0.5 mL (5 mcg)
HEPATITIS B IMMUNE GLOBULIN	0.5 mL	—	—	—

Storage

Store vials at 2° – 8°C (36° – 46°F). Storage above or below the recommended temperature may reduce potency.

Do not freeze since freezing destroys potency

For more detailed information, consult your MSD Representative or see Prescribing Information.

Merck Sharp & Dohme, Division of Merck & Co., INC., West Point, PA 19466.

J9RX08 (206)

MSD
MERCK
SHARP & DOHME

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY

EDITORIAL	Handwashing: Are Experimental Models a Substitute for Clinical Trials? Two Viewpoints	63
	Elaine Larson, PhD, RN, FAAN, CIC; M.L. Rotter, MD	
ORIGINAL ARTICLES	The Effects of Surfactant Systems and Moisturizing Products on the Residual Activity of a Chlorhexidine Gluconate Handwash Using a Pigskin Substrate	67
	Lee Benson, BS; Destin LeBlanc, BS; Lee Bush, PhD; John White, BS	
	Clinical Predictors of Infection of Central Venous Catheters Used for Total Parenteral Nutrition	71
	Carl W. Armstrong, MD; C. Glen Mayhall, MD; Kathy B. Miller, RN, MS; Heber H. Newsome, Jr., MD; Harvey J. Sugerman, MD; Harry P. Dalton, PhD; Gaye O. Hall; Sally Hunsberger	
	Disinfection of Water Distribution Systems for Legionella: A Review of Application Procedures and Methodologies	79
	Paul W. Muraca, MS; Victor L. Yu, MD; Angella Goetz, RN, MEd	
	Hospital Reimbursement Patterns Among Patients With Surgical Wound Infections Following Open Heart Surgery	89
	John M. Boyce, MD; Gail Potter-Bynoe, BS; Linda Dziobek, RN	
SPECIAL SECTIONS	Product Commentary	96
	The Disinfectant Dilemma Revisited	
	Inge Gurevich, RN, MA; Barbara Yannelli, RN, BS; Burke A. Cunha, MD	
	Topics in Clinical Microbiology	101
	<i>Pseudomonas aeruginosa</i> Revisited	
	Charles W. Stratton, MD	
DEPARTMENTS	Information for Authors	60
	Letters to the Editor	61
	<i>SHEA</i> Newsletter	105
	Calendar of Events	107
	Classified Marketplace	108

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-\$60.00, Two years—\$95.00; Three years—\$125.00 Institutional One year-\$70.00, Two years—\$110.00, Three years—\$150.00, Canada \$18.00 additional each year, all other countries \$30.00 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 Joanne Patterson 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 08086

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

Synergism is the working relationship between two ingredients which results in performance superior to that achieved by each ingredient working separately.

Synergism is Sporidicin. Glutaraldehyde combined with an alkaline phenate system produces superior disinfecting properties.* Patented Sporidicin disinfects with substantially less glutaraldehyde than other products.

Synergism makes Sporidicin tuberculocidal in only ten minutes at room temperature, 68° F and above, when diluted 1:16. Other alkaline glutaraldehyde products cannot be diluted and/or require longer contact times with heating to 77°F.

Sporicidin fulfills the CDC definition of high level disinfection using the lowest concentration of glutaraldehyde... because of Synergism.

* *Journal of Clinical Microbiology*,
November 1985, p. 735 - 739

**Sporicidin**
INTERNATIONAL

000 Old Georgetown Road, Rockville, Maryland 20847

We can conceive of no higher endeavor than the conscientious preparation for the medical and nursing professions of the means for combating the ills of humanity ~

Johnson-Johnson





For over a century, that philosophy has guided the growth of the largest and most diversified health care company in the world. Today, as we continue to grow in response to a health care marketplace where the need for effective infection control and wound care products, as well as efficient, specialized services, has never been greater, we can still conceive of no higher purpose.

Johnson & Johnson Medical Inc. was created to better meet your needs in the coming decade. Over the years, *Johnson & Johnson Patient Care, Surgikos and Sterile Design* have provided health care professionals with a wide range of products and a valuable body of knowledge in the critical area of infection control. Now, they come together as Johnson & Johnson Medical Inc., giving you a single source of continued support in the vital areas of infection control and wound care, while responding to the ever-increasing need for economic efficiencies. We dedicate Johnson & Johnson Medical Inc. to you, the health care professional, as we prepare to meet the special challenges of the 1990s together.

Johnson & Johnson
MEDICAL INC.