# PREHOSPITAL and DISASTER MEDICINE

Médecine Pré-Hospitalière et Médecine de Catastrophe

Volume 7, Number 4

October-December 1992

#### **Special Report**

Pan-European Congress on EMS

#### **Original Research**

Reanimatology Potentials in Armenia Earthquake
Casualty Collection Points
9-1-1 in Loma Prieta Earthquake
Patients Who Decline or Are Denied Transport
Patients Refusing Prehospital Transport
Vaccination of EMS Personnel

#### **Brief Report**

**ALS Procedures on Non-Emergency Calls** 

#### Educator

Management of Alzheimer's Patients Disaster Training Exercises

#### Administrator

Preventing Industrial Disasters EMS Operations Control

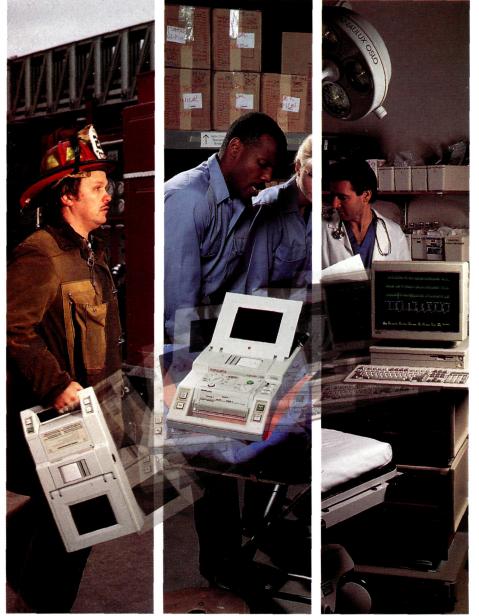
#### **Continuing Education**

The Scope of Disaster Management

The Official Journal of the
National Association of EMS Physicians and the
World Association for Emergency and Disaster Medicine
in association with the
Acute Care Foundation and the
National Association of State EMS Directors

Published Quarterly by Jems Communications

# Only Marquette defibrillators offer true EMS compatibility



MO1498DE1

Other companies describe their defibrillators as "compatible" because they use common supplies. At Marquette we regard this degree of compatibility as elementary, and design our defibrillators to communicate as well.

The Responder™ 1200 automatic advisory defibrillator and the Responder™ 1500 defibrillator/ monitor/pacemaker communicate with each other to facilitate seamless transfer of critical patient data from BLS to ALS levels. Simply transfer the patient data card™ from one model to the other for continuous full-disclosure ECG recording all the way to the emergency room.

Both Responder models also communicate with EDIC,™ Marquette's innovative emergency room ECG management system. Our defibrillators have digital printers for on-thespot data, but EDIC gives emergency room physicians the unprecedented capability of quickly overreading the entire ECG/code data record. It's almost like being on-site.

With these advanced communication capabilities, the Responders are leading a revolution in defibrillator design. They illustrate what being "compatible" really means.

For more information about how truly compatible Marquette defibrillators are, call us at 1-800-558-5120, ext. 3000.



Marquette Electronics, Inc. 

● Diagnostic Division

U.S.A.: 8200 West Tower Avenue • Milmoutee, Wisconsin 53223

1et. (414) 355-5000 

■ 11X 297991 Mel UR • FAX (414) 357-0415

Europe: 15, rue Rougemont 

● 75009 Paris, France

El. (33) (1) 42.46.0.0 (9 • FAX (33) (1) 48.01 04.41

Northeast Asia: Hornat Capital, 1-1-21 Shiraganedai 

● Minato-ku

Tokyo, Japan 

■ 1et. (81) (3) 3443-0367 

■ FAX (81) (3) 542-4749

Southeast Asia: 2 Leng kee Road 

● Type Hong Centre, Singapore

Tel. (65) 471-2133 

■ FAX (65) 474-1540

South Pacific: 12, 818 Pithwater Rd. 

● Dee Why NSW 2099 Australia

Tel. (61) (2) 77-2833 

■ FAX (65) (61) (2) 971-1860

### TABLE OF CONTENTS

Volume 7, Number 4 October-December 1992

Editor's Corner	010
EMS Agenda  Raymond L. Fowler, MD, FACEP	318
Special Report Pan-European Conference on EMS	323
Original Research	
Disaster Reanimatology Potentials:	
A Structured Interview Study in Armenia. III. Results, Conclusions, and Recommendations	327
A Computer Simulation of a California Casualty Collection Point Used to Respond to a Major Earthquake	339
Gus A. Koehler, PhD, Dennis Foley, Michelle Jones	
9-1-1 EMS Process in the Loma Prieta Earthquake	348
Charles C. Thiel, James E. Schneider, Donald Hiatt, Michael E. Durkin	
Follow-up and Outcome of Patients Who Decline or Are Denied Transport by EMS	359
Brian S. Zachariah, MD, David Bryan, MD, Paul E. Pepe, MD, FACEP, Monica Griffin, MD	
The Outcome of Patients Refusing Prehospital Transportation	365
Andrew Sucov, MD, Vincent P. Verdile, MD, FACEP, Doug Garettson, BS, EMT-P, Paul M. Paris, MD, FACEP	
Seroconversion by EMS Personnel Vaccinated with HBV Recombinant DNA	373
Max D. Koenigsberg, MD, FACEP, Sharon Ward, RN, Linda Herman, MD, Cary McDonald, MD, Richard M. Feldman, MD, FACEP	
Brief Report	
Unexpected ALS Procedures on Non-Emergency Ambulance Calls: The Value of a Single-Tier System	380
Educator	
A Model Strategy for Teaching Prehospital Personnel Management of Patients with Alzheimer's Disease  Debra Cason, RN, MS, Rosemary Wade Wilson, PhD, Paul K. Chafftz, PhD, Donald D. McIntire, PhD	383
Disaster Training Exercises: An Educationally Based Hierarchy	386

October-December 1992 311

# The Meeting:

THIS IS A MEETING FOR ALL EMS PERSONNEL. A MUST FOR ANYONE WHO IS SOMEONE IN THE EMS INDUSTRY.

#### NAEMSP WINTER MEETING: January 8-9, 1993

This two-track meeting will address (1) Challenges in EMS Education and (2) Controversies in Prehospital Therapeutics. The Education track will discuss the basics of EMS education, identify current and future challenges, increase physician awareness, and provide a forum for discussion between physician and non-physician EMS educators. The therapeutics track has been titled, "Drugs, Devices and Dilemmas" and will explore debatable topics for discussion allowing for powerful exchange between experts in the field.

## The Hotel:

The Ritz Carlton, Naples, Florida was chosen for its congenial, first class atmosphere. The luxury resort, awarded a Mobile Five-Star and AAA Five-Diamond rating, faces the Gulf of Mexico along three miles of secluded beach. The Ritz, located three miles north of Naples, is also just 25 miles south of Fort Myers regional Airport. A block has been reserved for the conference, BUT THEY GO FAST!! Rates are \$130 for a single or double. You may call the hotel directly at (813) 598-3300. THE LAST DAY FOR HOTEL RESERVATIONS IS DECEMBER 7, 1992.

**ROOMS ARE GOING FAST...HURRY!!** 

# Pre Conference &

#### NATIONAL EMS MEDICAL DIRECTOR COURSE & PRACTICUM: January 5 - 7, 1993

This is the next generation of the National EMS Medical Directors Course developed by the National Association of EMS Physicians, the American College of Emergency  $Physicians, and the Florida\,College\,of Emergency\,Physicians.$ The editors are recognized experts in various aspects of prehospital care and disaster medicine. They have developed an organized body of knowledge that each EMS Medical Director should possess to understand his/her role, responsibilities and available tools to properly supervise an EMS System. This course is highly interactive to reinforce the students' expertise in a number of real-world scenarios. New topics include the functions of direct medical control, administrative due process and risk management, the integration of multi-jurisdictional providers, and disaster planning and management. This course has expanded elements discussing priority dispatch and pre-arrival instructions and the elements of system design. The student will also have multiple opportunities to evaluate his/her system with consultation by the faculty.

# AIR MEDICAL PHYSICIAN ASSOCIATION: January 6 - 7, 1993

The Air Medical Physician Association (AMPA) is offering a two-day workshop for medical directors of air transport services to deal with in depth solutions to issues identified by participants of the Air Medical Physician Leadership Conference held at Snowbird, Utah in April of 1992. Specifically, justification for transport, the role of the medical director, training of medical directors, training of crew members, thresholds and indicators for invasive medical procedures, and legal issues will be examined. For information regarding registration, please contact Pat Petersen, Executive Director of AMPA, at 801/321-3699.

NAEMSP 3rd Annual Winter Meeting - January 8 - 10, 1993 - Ritz Carlton, Naples, Florida



Sponsored by The National Association of EMS Physicians

## Post Conference Events:

AMERICAN BOARD OF EMERGENCY MEDICINE EMS TASK FORCE MEETING: January 7, 1993

The ABEMEMS Task Force committee for Subspecialization in EMS will meet during the NAEMSP meeting.

# ACUTE ASPECTS OF ENVIRONMENTAL TOXICOLOGY WORKSHOP: January 10, 1993

The purpose of this symposium is to provide an educational forum for paramedics, nurses, and physicians who work in the field of emergency medical care on the recognition and management of acute hazardous materials events. Using actual exposures and review of the medical literature, we will provide a critical framework for the evaluation and treatment of patients. The workshop is supported in part by an appointment to the Agency for Toxic Substance and Disease Registry, a clinical fellowship program in environmental medicine administered by Oak Ridge Associated Universities through an inter-agency agreement between the U.S. Department of Energy and the Agency for Toxic Substance and Disease Registry. Continuing education credits will be available through the Agency for Toxic Substance and Disease Registry, Atlanta, Georgia.

## Evening Events:

A dinner reception hosted by American Safety Video and Mosby Yearbook is being planned for Friday, January 8th.

EMS Data Systems will return to Naples this year and sponsor the Saturday, January 9th, Beach Bash.

# Emphasizing:

Information pertinent to:

- Physicians
- **♥** Residents
- **♥** Paramedics
- **७** EMT s
- **♥** Nurses
- S EMS Administrators
- **Prehospital Care Providers**

# Interested?

Contact:

Kathleen Stage-Kern 230 McKee Place, Suite 500 Pittsburgh, PA 15213

(800) 228-3677



Two Tracks: Challenges in EMS Education & Controversies in Prehospital Therapeutics

314 Table of Contents

#### Administrator

2 Additional de Colonia de Coloni	
Recognition and Use of Sentinel Markers in Preventing Industrial Disasters	389
Elihu D. Richter, MD, MPH, Pamela V. Deutsch, MHS, Jacov Adler, MD	
Who's Calling the Shots?: A Theoretical Analysis of EMS Operations Control	396
Robert E. Suter, DO, MHA, EMT-P	
Continuing Education	

Introduction to Disaster Management: Lesson 1—The Scope of Disaster Management	400
Frederick C. Cuny	

Instructions for Authors	412
Forum	
Classifieds	415
Index for Volume 7	416

Editor's Note—The abstract cards for the Original Research papers were not included in Issues 1–3 of Volume 7, 1992. To ensure that an abstract card is printed for all of the Original Research papers that have been published in Volume 7, the abstract cards for numbers 1–4 are enclosed with this issue. Your comments about this change are welcomed.

#### **Publication and Production Editor**

Roland Tracy Will II School of Medicine University of Wisconsin—Madison, USA

Elizabeth Chapin Editorial Assistant

#### Advertising, Production and Subscription

Jems Communications
James O. Page, Publisher
Keith Griffiths, Executive Editor
Betty Till, Vice President
Thomas D. Scott II, Secretary/Treasurer
Dana Jarvis Bics, Director of Production
Gail M. Williams, Graphics Specialist
Janene Long, Production Coordinator
Richard C. Whallon, Jr., Director of Sales
Marte Reavis, Senior Advertising Manager
MaryBeth Locastro, Advertising Manager
Richard Bilger, Account Executive
Jay Hillis, Circulation/Marketing Director
Kevin Petrie, Fulfillment Manager

Prehospital and Disaster Medicine (ISSN 1049-023X) is published quarterly in the months of December, March, June, and September by Jems Communications, 1947 Camino Vida Roble, Carlsbad, CA 92008-6513, USA; (619)431-9797. Prehospital and Disaster Medicine incorporates the Journal of the World Association for Emergency and Disaster Medicine and the Journal of Prehospital Medicine.

Editorial Information: Submit manuscripts and editorial inquiries to: Marvin L. Birnbaum, MD, Editor, Prehospital and Disaster Medicine, 1552 University Avenue, Room 434, Madison, WI 53705, USA; (608) 263-7094, (608) 263-2069, Fax (608) 263-2069.

Subscription Information: One year (four issues)—Institutions: (U.S.)\$78; Individuals: \$48; Residents/In Training: \$35; Paramedic, Nurse, EMT: \$35. Canadian subscribers must add \$10 per year, and international subscribers add (U.S.) \$20 per year for postage. Claims of non-receipt or damaged issues must be filed within three months of cover date.

Advertising Information: Contact Jems Communications, P.O. Box 2789, Carlsbad, CA 92018; (619) 431-9797; Fax (619) 431-8176

Abstracts: Abstracts available in the National Association of EMS Physicians Electronic Database and the Emergency Care Information Center (ECIC).Indexed in the Cumulative Index to Nursing and Allied Health (CINAHL). The database is available online via BRS, Data-Star, and DIALOG, and on CD-ROM through CD Plus, Compact Cambridge and Silver Platter.

Copyright © 1992 by the National Association of Emergency Medical Services Physicians (USA), World Association for Emergency and Disaster Medicine, and the Acute Care Foundation.

Postmaster: Send address changes to Prehospital and Disaster Medicine, P.O. Box 2789, Carlsbad, CA 92018.

Second-class circulation postage paid at Carlsbad, Calif., and at additional mailing offices.

# PREHOSPITAL and DISASTER MEDICINE

#### Médecine Pré-Hospitalière et Médecine de Catastrophe

THE OFFICIAL JOURNAL OF THE WORLD ASSOCIATION FOR EMERGENCY AND DISASTER MEDICINE (WAEDM),
THE NATIONAL ASSOCIATION OF EMERGENCY MEDICAL SERVICES PHYSICIANS (NAEMSP),
IN ASSOCIATION WITH THE ACUTE CARE FOUNDATION AND

THE NATIONAL ASSOCIATION OF STATE EMERGENCY MEDICAL SERVICES DIRECTORS (NASEMSD)

#### **EDITOR**

Marvin L. Birnbaum, MD, PhD EMS Program University of Wisconsin–Madison Madison, Wisconsin, USA

#### ASSOCIATE EDITORS

Kimball Maull, MD MIEMSS Baltimore, Maryland, USA

Baltimore, Maryland, USA

Steven Rottman, MD Department of Emergency Medicine UCLA Hospitals and Clinics Los Angeles, California, USA

Martin Silverstein, MD Department of Surgery Uniformed Services Univ. of the Health Sciences Bethesda, Maryland, USA

#### PAST EDITORS

R Adams Cowley, MD Deceased (JWAEDM 1986–87)

Peter Safar, MD International Resuscitation Research Center University of Pittsburgh Pittsburgh, Pennsylvania, USA (JWAEDM 1981–85)

Michael Gunderson, REMT-P Pinellas County EMS System Largo, Florida, USA (JPM 1987–88)

#### **CONSULTING EDITORS**

Peter Safar, MD International Resuscitation Research Center University of Pittsburgh Pittsburgh, Pennsylvania, USA

Ronald Stewart, MD Victoria Hospital Halifax, Nova Scotia, Canada

#### **EDITORIAL BOARD**

Jakov Adler, MD Shaare Zedec Medical Center Jerusalem, Israel

Fritz Ahnefeld, MD University of Ulm Ulm, Germany

Paul B. Anderson Boise, Idaho, USA

Jack Ayres, JD, REMT-P University of Texas Health Science Center Dallas, Texas, USA

Peter Baskett, MD Frenchay Hospital Bristol, UK

Jeff Clawson, MD Salt Lake City Fire Department Salt Lake City, Utah, USA

Richard O. Cummins, MD University of Washington Seattle, Washington, USA

Craig DeAtley, PA-C George Washington University Medical Center Washington, D.C., USA

James DuCharme, MD Royal Victoria Hospital Montréal, Quèbec, Canada

Eelco Dykstra, MD Center for International EMS Wiesbaden, Germany

Morgan Fahey, MD, OBE Shirley Medical Centre Christchurch, New Zealand

Judith Fisher, MD British Association for Immediate Care London, UK

Malcolm Fisher, MD Royal North Shore Hospital Sydney, Australia

George Foltin, MD Bellevue Hospital Center New York University Medical Center New York, New York, USA

George Garnett, MD Soldotna, Alaska, USA

Michael Gunderson, REMT-P Office of the Medical Director Pinellas County EMS System Largo, Florida, USA S. William A. Gunn, MD European Centre for Disaster Medicine Medical Society of the WHO Geneva, Switzerland

Mark S. Johnson EMS Section, Alaska Dept. Public Health Juneau, Alaska, USA

Michael King, REMT Acute Care Foundation Tampa, Florida, USA

Per Kulling, MD Swedish Poison Information Centre Stockholm, Sweden

John C. Lane, MD University of Campinas Medical Center Sao Paolo, Brazil

Baxter Larmon, EMT-P UCLA Medical Center Los Angeles, California, USA

Prof. Li Zhong-Hao, MD Beijing Emergency Medical Center Beijing, China

Susan D. McHenry EMS Division, Virginia Dept. of Health Richmond, Virginia, USA

Norman E. McSwain, Jr., MD Tulane University Medical Center New Orleans, Louisiana, USA

Sergio Magalini, MD Universita Cattolicà del Sacro

Cuore Rome, Italy

Ronald F. Maio, DO University of Michigan Medical Center Ann Arbor, Michigan, USA

Michael Moles, MD Prince Philip Hospital Hong Kong University Hong Kong

Prof. Bernard Nemitz, MD Service d'Aide Medicale Urgente Centre Hospitalier Regionale et Universitaire Amiens, France

Eric Noji, MD United States Centers for Disease Control Atlanta, Georgia, USA

Judy Olson, BSN University of Wisconsin–Madison Madison, Wisconsin, USA James O. Page, JD Emergency Care Information Center Carlsbad, California, USA

Paul Paris, MD University of Pittsburgh Pittsburgh, Pennsylvania, USA

Jirí Pokorny, MD, DrSc Post-Graduate Medical School Prague, Czech

Ameen I. Ramzy, MD University of Maryland Baltimore, Maryland, USA

Lawrence W. Rose, MD Bethesda, Maryland, USA

Leonid B. Roshal, MD Institute of Pediatrics Academy of Medical Sciences Moscow, Russia, CIS

Sandra M. Schneider, MD University of Pittsburgh Pittsburgh, Pennsylvania, USA

Victor Semenov, MD Reanimatology Institute Academy of Medical Sciences Moscow, Russia, CIS

Carol J. Shanaberger, JD, EMT-P Colorado Division of Regulation Denver Colorado, USA

Shao Xiaohong, MD Peking Union Medical College Chinese Academy of Medical Science Beijing, China

John Shea, MD Loyola University Medical Center Maywood, Illinois, USA

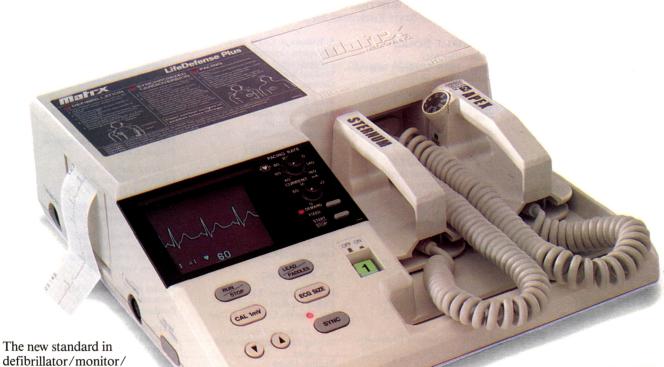
Daniel Spaite, MD University of Arizona Tucson, Arizona, USA

Takashi Ukai, MD Senri Critical Care Medical Center Osaka, Japan

Connie Walleck, RN, MS Health Science Center SUNY—Syracuse Syracuse, New York, USA

Donald Yealy, MD Texas A&M University Scott and White Memorial Hospital Temple, Texas, USA

# LifeDefense Plus from Matrx The New Standard in Defibrillator/Monitor/Pacers



The new standard in defibrillator/monitor/
pacers, LifeDefense Plus™ is the result of a joint venture between Matrx Medical Inc., the largest distributor and manufacturer of emergency care equipment and supplies in the United

States, and NEC San-ei Instruments Ltd., a worldwide leader in medical electronic technology. The new lightweight (18.7 lbs.) integrated defibrillator/monitor/pacer, LifeDefense Plus™ incorporates as standard, features that other units offer only as options.

#### Defibrillator

- Impedance indicator on paddle
- Energy setting on paddle
- Remote defibrillation
- Synchronized cardioversion
- Automatic recording of defibrillation event
- Pediatric paddle adapters

#### **Monitor**

- Large 7 sq. in. Sony® CRT screen
- Direct monitoring from ECG electrodes, paddles, or defibrillation electrodes
- Audio/visual message system
- Real/delay recording modes
- Annotated messages on Z-fold thermal paper

#### Pacer

- Demand pacing
- Fixed pacing
- High-impedance, conductive rubber electrodes

### DEMAND FIXED START STOP

#### **Battery support/accessories**

- High-capacity 2.2 amp hour NiCad battery
- Multiple-function battery support system
- Full complement of quality Matrx accessories

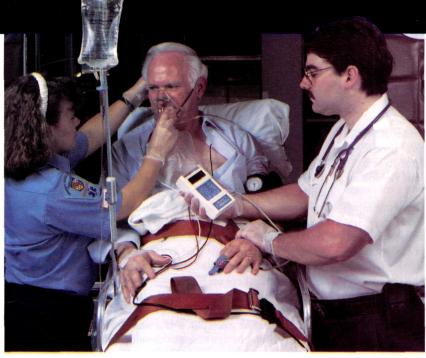
For more information and a demonstration of LifeDefense Plus™, the new standard in emergency cardiac care, call Matrx at 1-800-845-3550.



Corporate Headquarters/Technical Information Matrx Medical Inc., 145 Mid County Drive Orchard Park, NY 14127 U.S. (716) 662-6650 (800) 847-1000 Distribution (800) 845-3550 Canada (800) 876-2879 United Kingdom (0252) 621442



# Check pulse and O<sub>2</sub> saturation in seconds.



The MiniOX®V pulse oximeter was built with the EMT in mind. Powered by a standard 9-volt battery, the MiniOX®V delivers up to 150 hours of continuous monitoring. It goes everywhere. Because it's only 6 inches high and weighs 14 ounces, it fits everywhere.

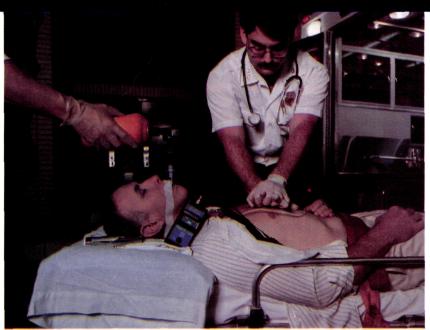
But this compact pulse oximeter is big on reliability and features. It provides accurate readings on even low perfusion patients. Features like user programmable high and low audible and visual alarms for both pulse and  $O_2$  saturation readings, help provide vigilant patient care. To find out more about this rugged, reliable, and easy-to-use pulse oximeter, call:

1-800-851-4500

#### MSA CATALYST RESEARCH

Medical Products, P.O. Box 427, Pittsburgh, PA 15230 412/776-8600 Fax: 412/776-8885

# Intubate and monitor airways with confidence.



Identification of  $\mathrm{CO}_2$  immediately following intubation is fast and simple with the MiniCAP III  $\mathrm{CO}_2$  detector. Using infrared technology connected directly to the endotrachael tube, the MiniCAP III detects the presence and absence of  $\mathrm{CO}_2$  during the respiration cycle. It also features a loss of respiration alarm, adjustable from 5-60 seconds.

Rugged and powered by 2 alkaline "C" cells, the MiniCAP III works well in a broad range of prehospital and clinical situations. Don't rely on breath sounds, chest rise, or disposable chemical-type detectors to verify proper tube placement. For more information on the MiniCAP III, call:

1-800-851-4500

MSA CATALYST RESEARCH

Medical Products, P.O. Box 427, Pittsburgh, PA 15230 412/776-8600 Fax: 412/776-8885