

PREHOSPITAL and DISASTER MEDICINE

Médecine Pré-Hospitalière et Médecine de Catastrophe

Medicina Prehospitalaria y de Catástrofes

病院にかかる前の処置と
災害医療

Volume 18, Number 1

January–March 2003

Original Research

Primary Healthcare System in Serbia

Mass Gatherings for Children

Hyperventilation after Brain Injury

Cost:Benefit of Point-of-Contact ABGs

Special Report

Anglo-American vs. Franco-German EMS

Editorials

Pro-Con and Editorial Comments

International Health Law and Ethics

Abstracts of Scientific and Invited Papers

Civil-Military Co-operation

1st NATO Medical Conference and 7th Blood Conference

Ljubljana, Slovenia

01–05 September 2003

<http://pdm.medicine.wisc.edu>

The Official Journal of the
World Association for Disaster and Emergency Medicine
and the
Nordic Society of Disaster Medicine

Super Light. Super Powers.



ZOLL M Series Defibrillator Monitor Pacemaker

Same lightweight unit. Dynamic new powers.

When you are off to the rescue, you need a lot of capabilities. 12-lead. EtCO₂. AED. Pulse Oximetry. And Rectilinear Biphasic waveform. Get them all in one small unit. The M Series. Ready to go anywhere. Easy to use anytime. Equipped to handle any situation. The M Series Defibrillator Monitor Pacemaker. It's eleven pounds of superpower. From ZOLL. Call **800-348-9011** or visit **www.zoll.com**

©2000 ZOLL Medical Corporation, Burlington, MA 01803

ZOLL
It's about time.

Table of Contents

Editor's Corner

- What's New?**1
Marvin L. Birnbaum, MD, PhD

Editorials

- The Editorial: A Means of Advancing Knowledge and Science**2
Samuel J. Stratton, MD, MPH

- Hercules versus the Methane Monster: Separating Law from Mythology for Practical Use in Disasters and Emergencies**4
Michael H. Hoffman, JD

Original Research

- Multimodal Assessment of the Primary Healthcare System of Serbia: A Model for Evaluating Post-Conflict Health Systems**6
Brett D. Nelson; Snezana Simic, MD, PhD; Lauren Beste; Dejana Vukovic, MD, PhD; Vesna Bjegovic, MD, PhD; Michael J. VanRooyen, MD, MPH, FACEP

- Medical Support for Children's Mass Gatherings**14
Andreas R. Thierbach, MD; Benno B. Wolcke, MD; Tim Piepho, MD; Marc Maybauer, MD; Rainer Huth, MD

- Prehospital Hyperventilation after Brain Injury: A Prospective Analysis of Prehospital and Early Hospital Hyperventilation of the Brain-Injured Patient**20
Dave Lal, MD; Steve Weiland, MD; Monica Newton, RN; Anne Flaten, RT; Michael Schurr, MD

- Cost: Benefit of Point-of-Care Blood Gas Analysis vs. Laboratory Measurement During Stabilization Prior to Transport**24
Andrew J Macnab, MD, FRCPC; Greg Grant, MD, FRCPC; Kyle Stevens, EMIII; Faith Gagnon, HBS; Robert Noble, EMIII; Charles Sun, MD, FRCPC

Special Reports

- Anglo-American vs. Franco-German Emergency Medical Services System**29
Wolfgang F. Dick, MD

Erratum

- Rapid Epidemiological Assessment of Health Status in Displaced Populations—an Evolution toward Standardized Minimum Essential Data Sets**178
David A. Bradt, MD, MPH, FACEM, FAFPHM, FAAEM; Christina M. Drummond, MBBS, DObst(RCOG), DTM&H, FRACP, MPH, MAE, FAFPHM

Forum

(letters to editor)

| | |
|----------------------|----|
| SARS in Canada | 38 |
| CPR | 39 |

Supplements

| | |
|--|-----------|
| Abstracts of Scientific and Invited Papers 13th World Congress on Disaster and Emergency Medicine | S1 |
| <i>Civil-Military Co-operation, 1st NATO Medical Conference and 7th Blood Conference Ljubljana, Slovenia; 01-05 September 2003</i> | |
| Instructions for Authors | iv |
| Guidelines for Advertisers | vi |

Statement of Ownership – Management and Circulation – Required by 39 U.S.C. 3685

1. Publication title: Prehospital and Disaster Medicine
2. Publication number 1049-023X
3. Filing date: 8 November 2003
4. Issue frequency: Quarterly
5. Number of issues published annually: 4
6. Annual subscription price: \$75.00 Individual/\$120 Institution
7. Mailing address of known office of publication: 732 N. Midvale Blvd, Suite 201, (Dane County) Madison, WI 53705-3243 USA
8. Mailing address of the headquarters of the general business office of the publisher: Same
9. Publisher: The World Association for Disaster and Emergency Medicine, 732 N. Midvale Blvd, Suite 201, (Dane County) Madison, WI 53705-3243 USA, Editor: Marvin L. Birnbaum, E5/615 Clinical Science Center, 600 N. Highland Avenue, Madison, WI 53792-6733 USA
10. Owner: World Association for Disaster and Emergency Medicine, 732 N. Midvale Blvd, Suite 201, Madison, WI 53705-3243 USA
11. Known: bondholders, mortgages, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: None
12. The purpose and function and nonprofit status of this organization and the exempt status for federal income tax purposes have not changed during the preceding 12 months.

Extent and Nature of Circulation:

1. Total copies: 900-avg. per issue during preceding 12 months/900 last issue
2. Paid/Requested Circulation: Outside country mail subscriptions 594
3. Others mailed through USPS 33
4. Free distribution outside the mail 135
5. Copies not immediately distributed 138 (used for education and promotion)

I certify that all information furnished is true and complete.

Marvin L. Birnbaum, MD, PhD, Editor-in-Chief and Director of the WADEM Business Office

Editorial Office

University of Wisconsin-Madison USA
Marvin L. Birnbaum, MD, PhD, Editor-in-Chief

Production Editor

Donna Schaan

Advertising

Mary Duss

Subscriptions

Mary Duss

Web Editor

Laura Prijic
University of Wisconsin-Madison

Editorial Interns

Laura Prijic
Kirra L. Hartwig
Erin K. Rushmer
Tao Lam (Dora) Fung

Publisher

World Association for Disaster and
Emergency Medicine
Madison, Wisconsin USA

Prehospital and Disaster Medicine (ISSN 1049-023X) is published quarterly in the months of January, April, July, and October by the World Association for Disaster and Emergency Medicine. *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, PhD, MD, Editor, *Prehospital and Disaster Medicine*, Clinical Science Center, 600 N. Highland (6733), Madison, WI 53792, USA; Telephone (01) (608) 263-9641 Facsimile (01) 608-265-9290; E-mail: mlb@medicine.wisc.edu

Subscription Information: One year (four issues)—Institutions: (U.S.) \$250; Individuals: \$95; Canadian and international subscribers must add \$6 per year for postage. Claims of non-receipt or damaged issues must be filed within three months of cover date. POSTMASTER: Send address changes to *Prehospital and Disaster Medicine*, P.O. Box 55158, Madison, WI 53705-8958 USA.

Advertising Information: Mary Duss; *Prehospital and Disaster Medicine*, Clinical Science Center, 600 N. Highland (6733), Madison, WI 53792 USA

Abstracts: Comprehensively abstracted by the National Library of Medicine (Medline), Cumulative Index to Nursing and Allied Health (CINAHL) and Health Star Cumulative Index. The database is available online via BRS, Data-Star, and DIALOG, and on CD-ROM through CD Plus, Compact Cambridge and Silver Platter. Abstracts and search capability available on the Internet at: <http://pdm.medicine.wisc.edu>.

Copyright © 2003 by the World Association for Disaster and Emergency Medicine. Periodicals postage paid at Madison, WI and at additional mailing offices.

EDITOR-IN-CHIEF

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

ASSOCIATE EDITORS

Wolfgang Dick, Dr Med
Johannes Gutenberg Universität
Mainz, Germany

Kimball Maull, MD
Carrway Injury Control
Institute
Birmingham, Alabama USA

Steven Rottman, MD
University of California–
Los Angeles
Los Angeles, California USA

Samuel Stratton, MD
University of California–Irvine
Los Angeles, California USA

SECTION EDITORS

International Health Law and Ethics
Michael Hoffman, JD
Washington, DC USA

PAST EDITORS

R Adams Cowley, MD
Deceased
(JWAEDM 1986–1987)

Peter Safar, MD
Deceased
(JWAEDM 1981–1985)

Michael Gunderson, REMTP
Health Analytics, UC
Lakeland, Florida USA
(JPM 1987–1988)

CONSULTING EDITORS

S. William A. Gunn, MD
European Centre for Disaster
Medicine
Geneva, Switzerland

Martin Silverstein, MD
Uniformed Services University
of the Health Sciences
Bethesda, Maryland USA

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

EDITORIAL BOARD

Jakov Adler, MD
Jerusalem, Israel

Ahmed Ammar, MD
Cairo, Egypt

Jeffrey Arnold, MD
Tufts University School of
Medicine
Springfield, Massachusetts USA

V. Anantharaman, MD
Singapore General Hospital
Singapore

Bishara Atiyeh, MD
American University
Beirut, Lebanon

Jan Babik, MD
Kosice Burn Center
Kosice–Saca, Slovakia

Peter Baskett, MD
Frenchay Hospital
Bristol, UK

David A. Bradt, MD, MPH
Royal Melbourne Hospital
Melbourn, Australia

Richard A. Bissell, PhD
University of Maryland–
Baltimore County
Baltimore, Maryland USA

Fredrick M. Burkle, MD, MPH
Johns Hopkins University
Baltimore, Maryland USA

Jeff Clawson, MD
Medical Priority Consultants,
Inc.
Salt Lake City, Utah USA

Felipe Cruz-Vega, MD
Social Security
Mexico City, Mexico

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, Québec Canada

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

Malcolm Fisher, MD
Royal North Shore Hospital
Sydney, Australia

Alain Flaujat, MD
Editor, Amelisap
Olonzao, France

Erik S. Gaull
George Washington University
Washington, DC USA

Sergey Goncharov, MD
All-Russian Disaster Medicine
Center
Moscow, Russia

Michael Gunderson
Health Analytics
Lakeland, Florida USA

Mark S. Johnson
Alaska Department of Public
Health
Juneau, Alaska USA

Mark Keim, MD
Centers for Disease Control
and Prevention
Atlanta, Georgia USA

Mark Klyachko, PhD
Center on Earthquake
Engineering
Petropavlovsk, Kam, Russia

Per Kulling, MD
Stockholm, Sweden

Baxter Larmon, PhD, EMT-P
University of California–
Los Angeles Medical Center
Los Angeles, California USA

Todd J. LeDuc
Broward County Fire Rescue
Ft. Lauderdale, Florida USA

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

Susan D. McHenry
National Highway Traffic
Safety Administration
Washington, DC USA

Sergio Magalini, MD
Universita Cattolica del Sacro
Cuore
Rome, Italy

Eric Noji, MD
Centers for Disease Control
and Prevention
Atlanta, Georgia, USA

Muneo Ohta, MD
Senri Medical Center
Osaka, Japan

Paul Paris, MD
Center for Emergency
Medicine
University of Pittsburgh
Pittsburgh, Pennsylvania
USA

Georg Petroianu, MD
University of Heidelberg
Mannheim, Germany

R. Abdul Radjak, MD
Ministry of Health
Jakarta, Indonesia

Daniel Rodriguez, MD
San Jose, Costa Rica

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

Don Schramm
University of Wisconsin
Madison, Wisconsin USA

Knut Ole Sundnes, MD
Baerum Hospital
Oslo, Norway

Frank Thomas, MD
Latter Day Saints Hospital
Salt Lake City, Utah USA

Shao Xiaohong, MD
Peking Union Medical College
Beijing, China

Takashi Ukai, MD
Osaka City General Hospital
Osaka, Japan

Michael Van Rooyen, MD
Johns Hopkins University
Baltimore, Maryland USA

Yasuhiro Yamamoto, MD
Department of Emergency and
Critical Medicine
Tokyo, Japan

Harsh Wardham, MD
Sundar Lal Jain Hospital
Delhi, India

INFORMATION FOR AUTHORS

Organization of Scientific Papers

Abstract—Concise summaries in the following format: **Introduction**: need for the study; **Hypothesis**: what was tested (experimental studies only) If qualitative, statement of problem addressed; **Methods**: summary of methods used with subsections as appropriate (type of subjects, number of subjects, study design, statistical tests; **Results**: summary of principal findings; **Conclusion**: implications of findings. If the work is qualitative, the types of instruments used and the scope and type of work must be annotated. If a disaster is involved, the dates, type, scope, location, and numbers of casualties and deaths must be summarized in tabular form for indexing. Do not exceed 375 words.

Introduction—Provide justification for the effort with appropriate references annotated. If quantitative, the concluding sentence should define the hypothesis. If qualitative, the problem should be stated clearly.

Methods—Descriptive to a degree that other investigators would be able to reproduce the study. Statistical methods used must be annotated. Approval by an Institutional Review Committee must be included when appropriate.

Results—Results must be written in text and may be accompanied by tables and figures. The text must explain all data included in tables and figures, but should not be unnecessarily redundant. All direct results from the study must appear in this section. No discussion of the results may be included.

Discussion—The Discussion should provide an interpretation of the Results in terms of meaning and application. Results should not be repeated. Computations or extrapolations that may help explain the results may be provided. Limitations of the study should be defined and suggestions for future research should be included. References that support or negate explanations provided are appropriate.

Conclusion—The findings in terms of implications for the practice of prehospital, emergency, and/or disaster (humanitarian) medicine should be summarized in a few sentences.

General Submission Requirements

Manuscripts—Manuscripts are preferred in electronic form (disk, CD, or e-mail) with a cover letter, cover page and manuscript. However, if electronic format is not available, we will accept manuscripts in paper form only. Electronic format: the cover letter, cover page, and manuscript should be sent as separate electronic files on one diskette or CD in WordPerfect or Word as Rich text Format (RTF) files. Please label the diskette or CD and include the paper's title and the primary author's surname. Electronic files may be submitted to our office via e-mail to the following address: pdm@medicine.wisc.edu. If the manuscript is submitted by mail, please include paper version of the cover letter, cover page, and one paper copy of the manuscript to accompany the disk. If submitting the article in paper form only, please send 1 cover letter, the cover page and manuscript.

Previous Publication—A manuscript will be considered only if it has not been published previously and is not under consideration for publication elsewhere.

Copyrights—After acceptance for publication, the copyright to the manuscript rests with *Prehospital and Disaster Medicine*.

Cover Letter—Each manuscript should be accompanied by a cover letter from the primary author who attests to the original nature of the material, that the paper has not been published elsewhere, is not under consideration by any other publication, and that the authors agree to transfer copyright to *Prehospital and Disaster Medicine* if accepted for publication. The institution(s) in which the work was performed, the sponsoring institution(s), and the respective departments must be annotated. If the work was supported all or in part by grants or endowments, the granting institution(s) should be indicated. If the paper has been, or is to be presented in a forum orally or as a poster, indicate the title of the forum, sponsoring institution, and the date of presentation. Specify the name of the author with whom any correspondence should be directed, and, correspondence street address, telephone number, telefacsimile (FAX) number, and e-mail address if appropriate.

Cover Page—Include a cover page that includes the title of the paper, first names, middle initials, last names, and highest academic degrees of all authors. Reiterate from the cover letter the name of the author with whom any correspondence should be directed and the street address, telephone number, telefacsimile (FAX) number, and e-mail address if appropriate. Do not indicate author names or institutions anywhere in the manuscript other than on the cover page.

Language—All manuscripts must be submitted in English.

Paper, Margins, and Type Style—Manuscripts should be submitted on plain white paper, letter size up to A4, 8.27" by 11.69" (210 mm by 297 mm). *Do not right justify the margins.* Use standard type styles. Do not use bold, italicized, superscript, or subscript characters, and make no extraneous marks on the printed manuscript page. Double space all text.

Key Words—On a separate page, show the title of the manuscript and eight or more key words or phrases to facilitate indexing or electronic searches.

Generic Names—Whenever possible, use generic names. Brand names may be indicated parenthetically and the name and location of the manufacturer must be provided in parentheses followed by a generic description of the medication, drug, product, or equipment. Also, do not use *We* or *Our* when describing the researchers. The fact that the research was conducted by the authors is implicit.

References—References should be cited in the sequential order in which they appear in the text. All references should be parenthetically cited by full-sized Arabic numbers in the text, tables, and legends for illustrations. Titles of journals referenced must be annotated using standard *Index Medicus* abbreviations and must be underscored. Unpublished data or personal communications should be indicated in parentheses

directly following the reference and should include the dates of such correspondence (Personal Communication, Safar P, October 1989). The following format for references should be used:

Journals—White SJ, Hamilton WA, Veronesi JF: Comparison of field techniques used to pressure infuse intravenous fluids. *Prehospital and Disaster Medicine* 1991;6: 429–434.

Books—Schwartz GR, Safar P, Stone JH, et al, eds: *Principles and Practice of Emergency Medicine*. 2d ed. Philadelphia: W. B. Saunders Co., 1985, pp 1198–1202.

Chapters—Lindberg R: Pathology of Head Injuries. In: Cowley RA, Trump BF (eds), *Pathophysiology of Shock*. Baltimore: Williams and Wilkins, 1982, pp 588–592.

Website—International Crisis group: Impact of the balibombings. In: *Indonesia Briefing*, Jakarta/ Brussels, 24 October 2002.

Available at: www.crisisweb.org/projects/asia/indonesia/reports/A400804_24102002.pdf. Accessed 09 June 2003.

Abbreviations—Abbreviations for groups of words may be used only for unusually cumbersome titles or for commonly accepted abbreviations. Whenever such abbreviations are used, they must be annotated with the initial mention of words within the manuscript followed by the abbreviation in parentheses. Standard scientific abbreviations may not be sub- or super-scripted.

Tables—Tables must be numbered as referenced in the text and each typed on a separate page, placed at the end of the manuscript. Do not include tables in the body of the text.

Figures—Illustrative materials must be of professional quality and camera ready (e.g., glossy camera-ready reproductions or PMTs). All such materials should be submitted as large as possible, up to 8.27" by 11.69" (A4 210 mm by 297 mm) and be at least **600 dpi resolution** for clarity when subsequently reduced to 3-inch margin size. Color illustrations must be discussed with the editor. Legends of figures are to be typed with double spacing on a separate page with reference to the number of the figure. The manuscript title, figure number, and an arrow to indicate the top of the illustration must be annotated on the back of each figure. All graphs, or charts submitted in an electronic format, must be at least **600 dpi**, and submitted in a PICT or JPG format. (Power Point or Excel graphs and charts must be saved in a PICT or JPG format.)

Permissions—Illustrations or tables from other publications must be accompanied by written permission from the author and publishers of the document in which they originally appeared. Computer generated figures must have a resolution of **600 dpi** or greater. jpeg format is preferred.

Publication Schedule—Manuscripts should be published within 6 to 9 months of acceptance and receipt of revisions.

Additional Information

Contact Marvin L. Birnbaum, MD, PhD, Editor, *Prehospital and Disaster Medicine*, Clinical Science Center (E5/615), 600 N. Highland, Madison, WI 53792 USA, (608) 263-9641; E-mail: mlb@medicine.wisc.edu.

Visit our Website: <http://pdm.medicine.wisc.edu>

Subscription and Business Information *for the readers of* Prehospital and Disaster Medicine

SUBSCRIPTION PRICES*

| | |
|----------------------|------------|
| | (4 issues) |
| Institutional | [US] \$250 |
| Individual | \$95 |

NOTE: "Institutional Subscribers" are defined as multiple reader subscribers and include public and private libraries, schools, hospitals, and clinics; city, county, and state, Provincial, and national government bureaus and departments; and all commercial and private institutions and organizations.

Individual subscriptions must be in the name of, billed to, and paid by individuals.

Send all subscription orders to: Prehospital and Disaster Medicine, P.O. Box 55158, Madison, WI 53705-8958 USA.

Subscription by E-mail: pdm@medicine.wisc.edu or call (01)608-263-2069; Fax (01)608-265-9290. Credit cards are welcome.

CHANGE OF ADDRESS or MISSING ISSUES

Please let our central office know as soon as possible when you plan to move. We need four to six weeks advance notice for uninterrupted service. Send us 1) your old address; 2) your new address; and 3) effective date of change.

If you have other questions about your subscription, please address them to: central office, Prehospital and Disaster Medicine at the above contact addresses.

BACK ISSUES

A limited supply of back issues not included in your subscription is available. In order to complete your library, contact the central office. Back issues that are available are listed on the PDM webpage:

<http://pdm.medicine.wisc.edu/> or a list can be obtained without charge by contacting the PDM office.

ON-LINE VERSION

Issues are posted on the PDM website. Except for the two most current issues, articles can be downloaded without charge. The two most current issues are password protected for subscribers.

ABSTRACTS

All of the abstracts of papers through Volume 16 are available on the PDM webpage.

EDITORIAL and SUBSCRIPTION INFORMATION

Please address all manuscripts and editorial inquiries and comments to: Marvin L. Birnbaum, Editor, *Prehospital and Disaster Medicine*, Suite 300, 3330 University Avenue, Madison, WI 53792 USA:

(01) 608-263-9641 or (01)608-263-2069; FAX: (01) 608-265-9290. See *Instruction to Authors* included in this issue. Papers accepted for publication generally will be published within six months of receipt of the revised manuscript.

INDEXES AND ABSTRACTS

PDM is indexed by National Library of Medicine (Medline), CINAHL; HealthStar, and on the PDM Website: <http://pdm.medicine.wisc.edu>

ADVERTISING GUIDELINES

Advertising Policy and Guidelines

General Statement

Prehospital and Disaster Medicine (PDM) is a scientifically based, peer-reviewed, medical journal. It is the policy of the editorial office of PDM that all advertising material be sound scientifically, and thus, meet the following guidelines:

- 1) Claims must be supported scientifically, and references provided — either within the advertisement or made available upon request;
- 2) Every effort must be directed to minimize the likelihood of possible erroneous interpretations of the claims; and
- 3) Advertisements should be aimed at a sophisticated, medical audience. Further information and rates available at our Internet site: <http://pdm.medicine.wisc.edu>

Review

Each advertisement considered for publication is submitted to the Editorial Office for review. Any advertisement that does not meet the guidelines will be returned to the advertiser with suggestions for revisions; the Editorial Office is available for consultation at any time.

Use of these guidelines and the process used for review add to the credibility of PDM and of the product.

Questions may be directed to Marvin L. Birnbaum, MD, PhD, Editor-in-Chief; 01-608-263-9641;

E-mail: mlb@medicine.wisc.edu