

DISASTER MEDICINE and PUBLIC HEALTH PREPAREDNESS

An Official Publication of the Society for Disaster Medicine and Public Health, Inc



IN THIS ISSUE:

- Using Space Technology for Disaster Response
- Disaster Recovery Research in Local Public Health Agencies
- Pediatric Inpatient Disposition (Reverse Triage) Classification System
- Redistribution of Emergency Department Patients After Disasters
- Improving the Major Crisis Response Coordination Capacities of the European Union

SDMPH
SOCIETY FOR DISASTER MEDICINE & PUBLIC HEALTH

CAMBRIDGE
UNIVERSITY PRESS



Office of the U.S. Surgeon General
Division of the Civilian Volunteer
Medical Reserve Corps



What can MRC volunteers do?

- Support local public health, while advancing the priorities of the U.S. Surgeon General by:
 - ✓ Promoting disease prevention
 - ✓ Improving health literacy
 - ✓ Eliminating health disparities
 - ✓ Enhancing public health preparedness
- Assist local hospitals and health departments with surge personnel needs
- Participate in mass prophylaxis and vaccination exercises and community disaster drills
- Train with local emergency response partners
- And much more...

Connect with your local MRC unit today!

www.MedicalReserveCorps.gov

The Tower Building
1101 Wootton Parkway, Suite 200
Rockville, MD 20852
240.453.2839 • MRCcontact@hhs.gov



Volunteers Building Strong, Healthy, and Prepared Communities

Disaster Medicine and Public Health Preparedness

Editor-in-Chief

James J. James, MD, DrPH, MHA

Chief Executive Officer,
Society for Disaster Medicine and
Public Health, Inc., USA

Deputy Editor

David Markenson, MD, MBA

Chief Medical Officer
Sky Ridge Medical Center
Senior Fellow and Medical Director
Center for Disaster Medicine
New York Medical College

Associate Editors

Elizabeth Ablah, PhD, MPH

Associate Professor,
University of Kansas-Wichita,
School of Medicine

Daniel J. Barnett, MD, MPH

Assistant Professor,
Department of Environmental
Health Sciences, Johns Hopkins
Bloomberg School of Public Health

**Charles W. Beadling, MD, FAAFP, IDHA,
DMCC**

Director, Center for Disaster and
Humanitarian Assistance Medicine
Uniformed Services University of the
Health Sciences

Laura J. Cavanaugh, MD, FAAP

Pediatrician, Private Practice, USA

Jennifer L. Chan, MD, MPH

Assistant Professor, Department
of Emergency Medicine,
Northwestern Feinberg School of
Medicine

Edbert B. Hsu, MD, MPH

Director of Training,
Johns Hopkins Office of Critical Event
Preparedness and Response

Stephanie Kayden, MD, MPH

Director, International Emergency
Medicine Fellowship, Brigham and
Women's Hospital

Frederick C. Nucifora Jr., DO, PhD, MHS

Department of Psychiatry and
Behavioral Science, Johns Hopkins
University School of Medicine

**Michael J. Reilly, DrPH, MPH,
NREMT-P, CEM**

Director, Center for Disaster Medicine
Associate Professor of Environmental
Health Science and Emergency Medicine
New York Medical College

Rebecca Zukowski, PhD, RN

Associate Academic Dean and Nursing
Division Chairperson, Mount Aloysius College

Managing Editor

Alice O'Donnell

HJF, National Center for Disaster Medicine
and Public Health
Editorial support provided by the National
Center for Disaster Medicine and Public Health

Copyeditor

Jennifer Holmes

Editorial Board

John Armstrong, MD, FACS

Associate Professor of Surgery,
USF Health, University of South Florida

**Frederick M. Burkle Jr., MD, MPH, DTM,
FAAP, FACEP**

Senior Fellow, Harvard Humanitarian
Initiative, Harvard School of Public Health

Cham E. Dallas, PhD

Director, Institute for Health Management
in Mass Destruction Defense, University of
Georgia & Medical College of Georgia

Linda C. Degutis, DrPH, MSN

Director, National Center for Injury
Prevention and Control, Centers for Disease
Control and Prevention

Lewis R. Goldfrank, MD

Herbert W. Adams Professor and Chair,
Department of Emergency Medicine,
New York University
Medical Director, New York City Poison Center

John L. Hick, MD

Associate Professor of Emergency
Medicine, Hennepin County Medical
Center, University of Minnesota

James G. Hodge, Jr., JD, LLM

Lincoln Professor of Health Law and Ethics
Director, Public Health Law and Policy
Program, Sandra Day O'Connor College of
Law, Arizona State University

Gabor Kelen, MD, FRCP(C), FACEP

Professor and Chair, Department of Emergency
Medicine, Johns Hopkins University

Thomas D. Kirsch, MD, MPH, FACEP

Associate Professor, Director of the
Center for Refugee and Disaster
Response, The Johns Hopkins
School of Medicine/Bloomberg
School of Public Health

William Lanier, MD

Professor of Anesthesiology, Mayo Clinic

Yasuhiro Otomo, MD, PhD

Director, Trauma and Acute Critical
Care Medical Center
Professor and Chairman,
Tokyo Medical and Dental University
Hospital of Medicine, Japan

Betty Pfefferbaum, MD, JD

Chairman, Department of Psychiatry
and Behavioral Sciences, University of
Oklahoma Health Sciences Center

Irwin Redlener, MD

Director, National Center for Disaster
Preparedness, Columbia University

Charles L. Rice, MD

President, Uniformed Services University
of the Health Sciences

Hou Shi-ke, MD

Institute for Disaster & Emergency
Medicine of PAPF
Affiliated Hospital of Logistic University,
Tianjin City, China

W. Craig Vanderwagen, MD

RADM, US Public Health Service, retired
Senior Partner, Martin, Blanck,
and Associates

Statistical Editors

Guohua Li, MD, DrPH

M. Finster Chair in Anesthesiology
and Epidemiology, Columbia
University College of Physicians and
Surgeons

Michael A. Stoto, PhD

Professor, Health Services Administration
and Population Health, Georgetown University
School of Nursing and Health Studies

Chair of Global Committee

Raymond E. Swienton, MD, FACEP

Co-director of EMS, Disaster Medicine and
Homeland Security Section, University of
Texas Southwestern

Associate Board

Erik Auf der Heide, MD, MPH, FACEP

Agency for Toxic Substances
and Disease Registry,
US Department of Health and
Human Services

Joseph A. Barbera, MD

Co-director, Institute for Crisis,
Disaster, and Risk Management,
The George Washington
University

Donna F. Barbisch, DrHA, MPH

Director, Institute for Global and Regional
Readiness

Steven M. Becker, PhD

Professor, College of Health Sciences
Old Dominion University

Georges Benjamin, MD, FACP

Executive Director, American Public Health
Association

John Brownstein, PhD

Associate Professor, Clinical and Public Health
Informatics, Boston Children's Hospital

Arthur Cooper, MD, MS, FACS, FAAP, FCCM

Director of Trauma & Pediatric Surgical
Services, Harlem Hospital Center

Asha Devereaux, MD, MPH

Chair, American College of Chest
Physicians Disaster Response
Network

Edward Eitzen, MD, MPH

Senior Partner, Biodefense and Public
Health Programs, Martin, Blanck and
Associates

Mikael Eliasson, MD, PhD

Strategic Marketing Leader,
General Medicine, GE Healthcare

Joshua Epstein, PhD

Director, Center on Social and
Economic Dynamics, The Brookings
Institution

J. Christopher Farmer, MD, FCCM

Associate Dean, Critical Care Medicine,
Mayo Clinic College of Medicine

Richard Garfield, RN, DrPH

Henrik H. Bendixen Professor of
Clinical International Nursing, Columbia
University

Jeffrey Hammond, MD, MPH

Clinical Professor of Surgery, Robert Wood
Johnson Medical School

D.A. Henderson, MD, MPH

Center for Biosecurity, University of
Pittsburgh Medical Center

David Joyner, MD

Vice Chairman/CMO, Salus Healthcare
International

David Lakey, MD

Commissioner, Texas Department of State
Health Services

E. Brooke Lerner, PhD

Department of Emergency Medicine,
Medical College of Wisconsin

Jonathan Links, PhD

Director, Center for Public Health
Preparedness, Johns Hopkins Bloomberg
School of Public Health

**Craig H. Llewellyn, MD, MPH, MSTMH,
FACPM**

Emeritus Professor of Military Medicine,
Emergency Medicine, Preventative
Medicine & Surgery, Uniformed Services
University School of Medicine

Darrell E. Lovins, DO, MPH, FACOFP

Associate Dean, Clinical Sciences,
William Carey University

Anthony Macintyre, MD

Visiting Associate Professor,
Institute for Crisis, Disaster, and
Risk Management, The George
Washington University

John Mutter, PhD

Professor of International and
Public Affairs, The Earth Institute
at Columbia University

Kobi Peleg, PhD, MPH

Director, Israel National Center for Trauma
and Emergency Medicine

Cheryl Peterson, RN, MSN

Senior Policy Fellow, American Nurses
Association

Steven J. Phillips, MD

Director, Specialized Information Services,
Associate Director, National Library of
Medicine, US Department of Health
and Human Services

Louis Rowitz, PhD

Professor, Community Health Sciences,
School of Public Health, University of
Illinois at Chicago

Joseph Scanlon

Professor Emeritus and Director,
Emergency Communications and
Research Unit, Carleton University

R. Tom Sizemore III, MD

Principal Deputy Director, Office of
Preparedness and Emergency Operations,
US Department of Health and Human
Services

Robert Ursano, MD

Professor/Chair, Department of Psychiatry,
Uniformed Services University of the Health
Sciences

Jeb Weisman, PhD

Director of Strategic Technologies,
National Center for Disaster Preparedness,
Columbia University

Kevin Yeskey, MD

Senior Advisor for Emergency Public Health,
MDB, Inc.

Global Committee**Michael Christian, MD, FRCP(C)**

Department of Medicine, University of
Toronto, Canada

Herman Delooz, MD, PhD, FCCM, FCEM (dist)

Research Group on Disaster Medicine,
Free University of Brussels

Natalia Gudzenko, MD

Laboratory for Cancer Epidemiology, Research
Center for Radiation Medicine, Ukraine

Keqin Rao, MD, MPH

Director, National Center for Health Statistics
and Information, Ministry of Health, China

Alessandra Rossodivita, MD EMDM

San Raffaele Hospital Scientific Foundation,
Milan, Italy

Nobhojit Roy, MD, MPH

Bhabha Atomic Research Center Hospital,
Mumbai, India

Disaster Medicine and Public Health Preparedness

JUNE 2015

Vol 9/No 3

On the Cover

- 225** Aerospace Technology for Disaster Relief
Marin Kobilarov
- 225** Message From Nepal
Vincenzo Bollettino
- 226** Report From Nepal
Eduardo Dolhun

Editorials

- 228** Lessons Un-Learned
James J. James
- 230** Disruptive Innovations
David Markenson

Letter to the Editor

- 232** An Update on Measles in Pakistan: Pakistan's New Polio in the Making
Zain Majid

Policy Analysis

- 234** The European Union Integrated Political Crisis Response Arrangements: Improving the European Union's Major Crisis Response Coordination Capacities
Iñigo de Miguel Beriain, Elena Atienza-Macías and Emilio Armaza Armaza

Brief Report

- 239** Understanding Community-Level Disaster and Emergency Response Preparedness
Crystal Shannon

Original Research

- 245** Education in Disaster Management and Emergencies: Defining a New European Course
Amir Khorram-Manesh, Michael Ashkenazi, Ahmadreza Djalali, Pier Luigi Ingrassia, Tom Friedl, Gotz von Armin, Olivera Lupesco, Kubilay Kaptan, Chris Arculeo, Boris Hreckovski, Radko Komadina, Philipp Fisher, Stefan Voigt, James James and Elin Gursky, for the Scientific Committee of the DITAC Project
- 256** Redistribution of Emergency Department Patients After Disaster-Related Closures of a Public Versus Private Hospital in New York City
David C. Lee, Silas W. Smith, Brendan G. Carr, Lewis R. Goldfrank and Daniel Polsky
- 265** Using Functional Needs and Personal Care Assistance Rather Than Disability Status During Chronic Care Triage in Community Mass Care
Athena Fannin, Donald E. Brannen, Melissa Howell and Shari Martin

TABLE OF CONTENTS

- 275** Patterns and Predictors of Primary Mental Health Service Use Following Bushfire and Flood Disasters
Lennart Reifels, Bridget Bassilios, Matthew J. Spittal, Kylie King, Justine Fletcher and Jane Pirkis
- 283** Pediatric Disposition Classification (Reverse Triage) System to Create Surge Capacity
Gabor D. Kelen, Lauren Sauer, Eben Clattenburg, Mithya Lewis-Newby and James Fackler
- 291** Crisis Counselors' Perceptions and Assessment of Suicidal Behavior Among Hurricane Survivors Receiving Crisis Counseling Services
Lisa M. Brown, Julie L. Framingham, Kathryn A. Frahm and Laurie D. Wolf
- 301** Vulnerability of Urban Homebound Older Adults in Disasters: A Survey of Evacuation Preparedness
Patrick J. Dostal
- 307** Correlation Between the Great East Japan Earthquake and Postpartum Depression: A Study in Miyako, Iwate, Japan
Hidekazu Nishigori, Michiho Sasaki, Taku Obara, Toshie Nishigori, Mami Ishikuro, Hirohito Metoki, Junichi Sugawara, Shinichi Kuriyama, Akira Hosoyachi, Nobuo Yaegashi, Takashi Kobayashi and Noboru Yoshizumi

Concepts in Disaster Medicine

- 313** Comparative Cost of Stockpiling Various Types of Respiratory Protective Devices to Protect the Health Care Workforce During an Influenza Pandemic
Gio Baracco, Sheri Eisert, Aaron Eagan and Lewis Radonovich
- 319** Innovative Methods for the Benefit of Public Health Using Space Technologies for Disaster Response
Petros C. Dinas, Christian Mueller, Nathan Clark, Tim Elgin, S. Ali Nasser, Etai Yaffe, Scott Madry, Jonathan B. Clark and Farhan Asrar

Systematic Review

- 329** The Incidence of Posttraumatic Stress Disorder After Floods: A Meta-Analysis
Long Chen and Aizhong Liu

CONTACT INFORMATION

Editorial Office

NCDMPH
11300 Rockville Pike, Suite 1000
Rockville, MD 20852
P: 240-833-4429
E: dmphjournal@gmail.com

Edited from the Offices of the National Center for Disaster Medicine and Public Health (NCDMPH) located at the Uniformed Services University of the Health Sciences (USUHS) under a cooperative enterprise agreement between USUHS and The Society for Disaster Medicine and Public Health. The views expressed in each article are those of the author and do not necessarily reflect the official policy or position of NCDMPH, USUHS, the Department of Defense, or the United States Government.

Manuscript Submission and Instructions for Authors

May be found online at <http://mc.manuscriptcentral.com/dmp>

DMPHP Reprints & Permissions

Article Reprints/E-prints Inquiry

For use by commercial entities or educational institutions:
special_sales@cambridge.org

Permissions Inquiry

For rights and permissions inquiries, please visit www.cambridge.org/about-us/rights-permissions

Advertising

For details about advertising rates and opportunities in *Disaster Medicine and Public Health Preparedness*, or to request a media pack, please contact M. J. Mrvica Associates, 2 West Taunton Avenue, Berlin, NJ 08009; Phone: 856-768-9360; Fax: 856-753-0064; Email: mjmrivica@mrivica.com.

Subscription Rates and Service

Subscription Information

Disaster Medicine and Public Health Preparedness (ISSN: 1935-7893; EISSN: 1938-744X) is published bi-monthly by Cambridge University Press, 32 Avenue of

the Americas, New York, New York 10013. Copyright © 2015 by the Society for Disaster Medicine and Public Health, Inc.

Annual Subscription Rates

Annual institutional print and electronic subscription rates: US \$600.00 in the USA, Canada and Mexico; UK £375.00 + VAT elsewhere. Institutional electronic rates only: US \$460.00.00 in the USA, Canada and Mexico; UK £287.00 + VAT elsewhere. Prices include surface postage and insurance.

Information on *Disaster Medicine and Public Health Preparedness* and all other Cambridge journals is available at <http://www.cambridge.org/>. Full text for this journal may be found at <http://journals.cambridge.org/dmp>.

When citing this journal, please abbreviate as *Disaster Med Public Health Preparedness*.

Indexed in MEDLINE.

Disaster Medicine and Public Health Preparedness participates in the Health InterNetwork Access to Research Institute Initiative (HINARI), which provides free or very-low-cost online access to major journals in biomedical and related social sciences to local, nonprofit institutions in developing countries. Please visit www.who.int/hinari for more information.

Copyright ©2015 Society for Disaster Medicine and Public Health, Inc.

All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying or otherwise, without permission in writing from Cambridge University Press, except when permission is obtained through a bona fide copyright clearinghouse, such as the Copyright Clearance Center (USA) or the Copyright Licensing Agency (UK). For further information please visit <http://us.cambridge.org/information/rights/> or <http://www.cambridge.org/uk/information/rights/>.

Periodicals postage paid at New York, NY, and additional mailing offices. Return Postage Guaranteed. **Postmaster:** Send address changes in the USA and Canada to: *Disaster Medicine and Public Health Preparedness*, Cambridge University Press, Journals Fulfillment Dept., 100 Brook Hill Drive, West Nyack, NY 10994-2133.