

Disaster Medicine and Public Health Preparedness

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

Volume 16



CAMBRIDGE
UNIVERSITY PRESS

SDMPH
SOCIETY FOR DISASTER MEDICINE & PUBLIC HEALTH

DISASTER MEDICINE AND PUBLIC HEALTH PREPAREDNESS

Journal of the Society for Disaster Medicine & Public Health, Inc.

<https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness>

Volume 16, Issues 1-6

eISSN: 1938-744X; ISSN: 1935-7893

Editor-in-Chief

James J. James, MD, DrPH, MHA, Chief Executive Officer, Society for Disaster Medicine and Public Health, Inc.,
Onancock, Virginia, USA

Deputy Editor

Charles W. Beadling, MD, FAAP, IDHA, DMCC, Associate Professor, Uniformed Services University of the Health Sciences,
Bethesda, Maryland, USA

Shinichi Egawa, MD, PhD, Professor, Division of International Cooperation for Disaster Medicine, Tohoku University, Sendai, Japan

Stephanie Kayden, MD, MPH, Director, International Emergency Medicine Fellowship, Brigham and Women's Hospital, Boston,
Massachusetts, USA

Amir Khorram-Manesh, MD, PhD, Associate Professor of Surgery, Gothenburg University, Gothenburg, Sweden

David Markenson, MD, MBA, FAAP, FACEP, Medical Director, Center for Disaster Medicine, New York Medical College, Valhalla, NY, USA

Stephen S. Morse, PhD, Professor of Epidemiology & Director, Infectious Disease Epidemiology Certificate, Mailman School of Public
Health, Columbia University, New York, New York, USA

Eric S. Weinstein, MD, MScDM, CRIMEDIM - Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global
Health, Università del Piemonte Orientale, Novara, Italy

Associate Editor

Nebil Achour, PhD, MSc, Programme Director, Department of Medicine and Healthcare Science, Anglia Ruskin University, UK

James Aiken, MD, MHA, Clinical Associate Professor of Medicine, Section of Emergency Medicine, LSU Health, School of Medicine,
New Orleans, Louisiana, USA

Lisa Baker, PhD, LCSW, Professor and Chair, School of Public Health, Department of Social Work, Samford University, Birmingham, AL, USA

Daniel J. Barnett, MD, MPH, Associate Professor, Department of Environmental Health Sciences, Johns Hopkins Bloomberg School of
Public Health, Baltimore, Maryland, USA

Francesco Barone-Adesi, MD, PhD, Associate Professor, Department of Pharmaceutical Sciences, University of Eastern Piedmont,
Novara, Italy

Rita V. Burke, PhD, MPH, Assistant Professor of Research Surgery and Preventive Medicine Pediatric Surgery, Children's Hospital Los
Angeles, California, USA

Frederick M. Burkle Jr., MD, MPH, DTM, FAAP, FACEP, Harvard School of Public Health, USA

Andrea Conti, MD, Public Health and Preventive Medicine, University of Eastern Piedmont, Novara, Italy

Alessandro Costa, UPO, Vercelli, Piemonte, Italy

Joseph Cuthbertson, MPH, MSc, Clinical Risk Management Coordinator, Monash University, Perth, Australia

Linda C. Degutis, DrPH, MSN, Executive Director, Defense Health Horizons, Chief Executive Officer, The Avielle Foundation, Atlanta, GA

Marcelo Dell'Aringa, MD, CRIMEDIM, Università degli Studi del Piemonte Orientale Amedeo Avogadro, Novara, Italy

Aram Dobalian, PhD, JD, MPH, Professor and Director, Division of Health Systems Management and Policy, Memphis School of Public
Health, Memphis, Tennessee, USA

Donald A. Donahue, Jr., DHEd, MBA, University of Maryland Baltimore, Maryland and Potomac Institute for Policy Studies, Virginia, USA

Katherine Fogelberg, DVM, PhD, Center for Innovation in Veterinary Education and Technology (CIVET), Lincoln Memorial
University and College of Veterinary Medicine, Fort Worth, Tennessee, USA

Alejandro N. Gemelli, MD, Intensive Care Department, Hospital Italiano de Buenos Aires, Argentina

Anat Gesser-Edelsburg, PhD, Head of Health Promotion Program, School of Public Health, Faculty of Social Welfare and Health
Science University of Haifa, Israel

David Glotzer, DDS, Clinical Professor Cariology and Comprehensive Care, New York University, NY, USA

Krzysztof Goniewicz, PhD, Medical University of Warsaw and Military University of Aviation in Deblin, Poland

Heather Hayanga, MD, MPH, Associate Professor, ACTA Fellowship Program Director, Co-Director Cardiac Anesthesia Education and Clinical Research, West Virginia University, Morgantown, West Virginia, USA
Attila J. Hertelendy, PhD, Department of Information Systems and Business Analytics, College of Business, Florida International University, Miami, FL, USA
Edbert B. Hsu, MD, MPH, Director of Training, Johns Hopkins Office of Critical Event Preparedness and Response, Baltimore, Maryland, USA
Kelly Klein, MD, UT Southwestern, Surgery, Dallas, Texas, USA
Nicolette Louissant, PhD, Healthcare Ready, Washington, DC, USA
Gavin MacGregor-Skinner, BVSc, MSc, MPH, MRCVS, Penn State University, College of Medicine, Hershey, Pennsylvania, USA
Holly H. Mash, PhD, Center for the Study of Traumatic Stress, Department of Psychiatry, Uniformed Services University of the Health Sciences, Psychiatry, Bethesda, Maryland, USA
Kako Mayumi, PhD, Hiroshima University Graduate School of Medicine, Hiroshima, Japan
Meghan D. McGinty, PhD, MPH, MBA, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA
Erica Nelson, MD, PhM, MAS, Harvard Humanitarian Initiative, Cambridge, Massachusetts, USA
Frederick C. Nucifora Jr., DO, PhD, MHS, Department of Psychiatry and Behavioral Science, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA
Sae Ochi, MD, MPH, PhD, Department of Laboratory Medicine, Jikei University School of Medicine, Minato-ku, Tokyo, Japan
Sneha Patel, MPH, MSW, Columbia University Mailman School of Public Health, Population and Family Health, New York, NY, USA
Michael J. Reilly, DrPH, MPH, NREMT-P, CEM, Center for Disaster Medicine, New York Medical College, Valhalla, New York, USA
Kandra Strauss-Riggs, MPH, Division of Community Mitigation & Recovery, HHS ASPR, Office of Emergency Management and Medical Operations, Office of the Assistant Secretary for Preparedness and Response Washington, District of Columbia, USA
Kevin Taaffe, PhD, Chair, Department of Industrial Engineering, Clemson University, Clemson, South Carolina, USA
Christopher Tedeschi, MD, Columbia University, Department of Emergency Medicine, New York, NY, USA
Mary C. Vance, MD, LCDR, USPHS/USCG, Director of Behavioral Health, Pacific, AOR, HSWL SC - DD Alameda, California, USA
Kelly G. Vest, DVM, MPH, HAACP Consulting Group, Alexandria, Virginia, USA

Managing Editor

Alice O'Donnell, Society for Disaster Medicine and Public Health, USA

Editorial Board

Lewis R. Goldfrank, MD, New York University / New York City Poison Center, USA
John L. Hick, MD, University of Minnesota, USA
James G. Hodge, Jr., JD, LL.M., Arizona State University, USA
Gabor Kelen, MD, FRCP(C), FACP, Johns Hopkins University, USA
Yasuhiro Otomo, MD, PhD, Tokyo Medical and Dental University Hospital of Medicine, Japan
Irwin Redlener, MD, Columbia University, USA
Hou Shi-ke, MD, Affiliated Hospital of Logistic University, China
W. Craig Vanderwagen, MD, Martin, Blanck, and Associates, USA

Statistical Editors

Guohua Li, MD, DrPH, Columbia University College of Physicians and Surgeons, USA
Michael A. Stoto, PhD, Georgetown University School of Nursing and Health Studies, USA

Chair of Global Committee

Raymond E. Swienton, MD, FACP, University of Texas Southwestern, USA

Information about editors and editorial board members correct as of 1st January 2022. For the latest information please see <https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/information/editorial-board>

Aims & Scope

Disaster Medicine and Public Health Preparedness is the first comprehensive and authoritative journal emphasizing public health preparedness and disaster response for all health care and public health professionals globally. The journal seeks to translate science into practice and integrate medical and public health perspectives. With the events of September 11, the subsequent anthrax attacks, the tsunami in Indonesia, hurricane Katrina, SARS and the H1N1 Influenza Pandemic, all health care and public health professionals must

be prepared to respond to emergency situations. In support of these pressing public health needs, Disaster Medicine and Public Health Preparedness is committed to the medical and public health communities who are the stewards of the health and security of citizens worldwide.

Society for Disaster Medicine & Public Health, Inc.

Vision

The SDMPH is dedicated to the promotion and advancement of excellence in disaster medicine and public health across a broad global, multiprofessional membership. The SDMPH will provide members with resources, organizational structure, and the means to sustain interprofessional interaction and discourse related to the discipline of disaster medicine and public health.

Mission

The mission of the SDMPH is to advance and promote excellence in education, training and research in disaster medicine and public health for all potential health system responders based on sound educational principles, scientific evidence and best clinical and public health practices.

© The Author(s), 2022. Published by Cambridge University Press on behalf of Society for Disaster Medicine and Public Health, Inc



CAMBRIDGE
UNIVERSITY PRESS

SDMPH
SOCIETY FOR DISASTER MEDICINE & PUBLIC HEALTH