

CASE STUDIES IN
**Public Health
Preparedness**
and **Response**
to **Disasters**

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Table of Contents

	Preface	xv
	Acknowledgments.....	xix
Section		
I	Natural Events	1
Case		
1	The Great East Japan Earthquake of March 11, 2011. . .	3
	Background	4
	The Science of Earthquakes	4
	The Science of Tsunamis.....	5
	The Science of Nuclear Power	5
	Japan's Nuclear Concerns Immediately Following the Earthquake	7
	Measures of Earthquake Preparedness	7
	Protection Against Tsunamis	8
	Impact of Culture	10
	Events in Japan	10
	Response	14
	The Future	17
	Discussion Questions	18
	References	19
Case		
2	Southern California Wildfires of 2007: Preparing and Responding to Culturally and Linguistically Diverse Communities.....	21
	Background	22
	The San Diego Fires.....	23

IV Table of Contents

Warning and Evacuation	28
Shelter, Response, and Relief	30
After Action Reports and Lessons Learned	35
Conclusion	36
Discussion Questions	37
References	37

Case

3	The 1999 North Carolina Floyd Flood	39
	Background	40
	Hurricanes and the Floyd Flood	42
	North Carolina's Response Structure	43
	Role of Public Health	45
	The Emergency Operations Center	47
	Establishing a Public Health Command Structure within the EOC	50
	Establishment of Zone Structures	51
	Drowned Hogs	52
	Communicating Risk and Protective Actions	55
	Volunteers	55
	Just-in-Time Training	56
	The Role of the University of North Carolina School of Public Health	57
	Conclusion	58
	Discussion Questions	59
	References	59

Case

4	Residential Facilities and Functional Needs: Preparing for and Responding to Emergencies in Pennsylvania	61
	Background	62
	Providing for Those with Functional Needs	62
	The State Response	65
	Emergency Preparedness Plans	66

Table of Contents v

	Impact from the Storm	66
	Emergency Response.	67
	After Action Analysis	70
	Discussion Questions	71
	References	72
Case		
5	Hurricane Irene: Evacuation of Coney Island Hospital.73
	Introduction.74
	Coney Island Hospital74
	Background	75
	Storm Tracking and Notification76
	Decision Making: Evacuations.	77
	Coastal Storm Impact on Healthcare Facilities	78
	Notification and Activation	80
	Assessment.	80
	Coney Island Hospital, Day by Day.81
	Conclusion.	95
	Discussion Questions	96
	References	96
Section		
II	Man-Made and Technological Events97
Case		
6	Rescue Following a Mine Collapse in Chile, 2010.99
	Background	100
	The Mine Rescue	100
	The Players.	102
	Two Angles of Vision: From Above and From Below	105
	Stage 1: Getting There	108
	Stage 2: Survival and Risk Management.	109

vi Table of Contents

	Stage 3: Getting Them Out	116
	The Resolution: The Ascent of “The 33”	123
	Aftermath of the Rescue	126
	Discussion Questions	129
	References	129
Case		
7	The Lessons of Tragedy: The 2004 Madrid Train Bombings.	135
	Introduction.	136
	The Anatomy of the Attack Response	137
	Discussion	139
	The New Normal	141
	Conclusion.	146
	Discussion Questions	147
	References	147
Case	149	
8	The <i>Deepwater Horizon</i> Gulf Oil Spill Disaster	149
	Background	150
	Overview	151
	History Repeats Itself: The Ixtoc I Gulf Oil Spill, -1979	156
	The Key Players	156
	Residents of the Gulf Coast Representing the Most Impacted Businesses and Industries	168
	Chronology of the Disaster	169
	The Major Public Health Issues	172
	Louisiana’s Immediate Public Health Experience	181
	Making Future Chronic Health Predictions Based on Prior Experiences.	183
	What’s Next?	184
	The Resolution and Early Consequences of the Disaster.	187
	Conclusions and Future Recommendations.	187
	Discussion Questions	189
	References	189

Case

9

Planning for the Republican National Convention 2004: Findings from the New York City Department of Health and Mental Hygiene	195
Introduction.	196
The Assignment.	196
Introductory Meetings	197
A Special Consideration for Planning—Enhanced Disease and Environmental Surveillance during the RNC	201
Activities and Events During the RNC	203
Conclusions	206
Discussion Questions	207
Acknowledgments.	208
References	208

Case

10

World Trade Center Attack on September 11, 2001	209
Introduction.	210
The Emergency Preparedness Planning in Place on 9/11/2001	213
Prior Emergency Events at the WTC	215
Crisis Begins—8:46 am, September 11, 2001.	216
Tragedy Unfolds ²⁻⁷	217
Events in WTC 2—9:02 am	222
Conditions Worsen	223
Emergency Response: Problems with Communications.	224
Disaster Unfolds	224
WTC 2 Collapses—9:59 am	225
WTC 1 Collapses—10:28 am	225
Environmental Conditions Worsen.	227
Medical Response	227
Impact on Survivors and the Community	229
Dead and Injured.	229
Public Health Response	230
The Cleanup.	230

viii Table of Contents

	Long-Term Impact: Building and Fire Safety Codes	231
	Going Forward	231
	Discussion Questions	231
	References	232
Case		
11	Addressing the Mental Well-Being of New Yorkers in the Aftermath of the 9/11 and Bioterror Attacks	233
	Introduction	234
	The Mental Health Response	235
	Bioterrorism	240
	After the Attacks	242
	Discussion Questions	246
	References	246
Section		
III	Emerging Infections	249
Case		
12	Gastrointestinal Anthrax Associated with a Drumming Circle in New Hampshire	251
	Background	252
	The Laboratory Response Network	252
	Historical Perspective on Anthrax in the United States	255
	Infection Caused by <i>B. anthracis</i>	257
	The New Hampshire Public Health Laboratories	258
	The Association of Public Health Laboratories and Public Health Preparedness and Response	258
	Unknown Illness	259
	Epidemiological Investigation	261
	Conclusion and Changes in Practice	265
	Discussion Questions	268
	References	268

Case

13**Surveillance in Emergency Preparedness:****The 2009 H1N1 Pandemic Response 271**

Introduction. 272

A Steep Learning Curve Indeed 272

It's Just a Cold, Right? 274

The Viruses, They Are A-Changing 275

The Outbreak: Serendipitous Testing 276

Fourteen Months in the Subbasement 279

What We Did 281

I Wish That I Knew Then What I Know Now 294

The Road Ahead 297

Conclusion. 304

Discussion Questions 306

References 306

Case

14**Mandatory Vaccination and H1N1:****A Large Urban Hospital's Response. 311**

Background 312

Impact on Healthcare Systems. 312

Public Health Surveillance. 313

A New Vaccine 316

A New Regulation 316

Why Regulation? 317

Urban Hospital Acts 318

The PODs Begin 322

Dissention 323

Healthcare Workers and Others React throughout

New York State. 325

Court Fights. 326

Acknowledgements. 327

Discussion Questions 327

References 328

x Table of Contents

Case	
15	2009 H1N1 Influenza Epidemic in Iowa. 331
	Background 332
	Seasonal and Novel Influenza 333
	National Laboratory System. 334
	Iowa's State Laboratory System 335
	The Clinical Laboratory 336
	The Testing Process 337
	Transport of Specimens 338
	The H1N1 Pandemic Appears 338
	Importance of a Dedicated Workforce. 339
	The SHL and LRN during the H1N1 Pandemic 340
	Work at the SHL. 341
	Media and the Worried Well 342
	Conclusion. 343
	Discussion Questions 343
	References 344
Case	
16	The Martha's Vineyard Public Health System Responds to 2009 H1N1. 345
	Introduction. 346
	The Martha's Vineyard Public Health System. 346
	The Public Health Response to 2009 H1N1 350
	On the Vineyard 351
	After Action Analysis 353
	Discussion Questions 356
	Acknowledgements. 356
	References 358
Appendix	
	Public Health Preparedness and Response Core Competency Model 359

Foreword

At a time when disaster and catastrophic events are escalating in scale globally with increasingly profound consequences, this book, *Case Studies in Public Health Preparedness and Response to Disasters*, edited by Linda Young Landesman, and Isaac Weisfuse, is an exceptional resource. This book is designed to highlight, through a presentation of 16 cases, the responsibility of reducing preventable public health threats to life, the environment, social systems, and the economy. As reported in the Trust for America's Health 2012 Report, *Ready or Not? Protecting the Public's Health From Diseases, Disasters and Bioterrorism*, the public's health must be protected from emergency and disaster events, including extreme weather events such as Superstorm Sandy, man-made events such as threats of bioterrorism, and emerging infections such as the H1N1 pandemic flu. Drs. Landesman and Weisfuse and the case study authors provide a critical resource for public health, health care, and other preparedness partners to better prepare for and respond to all hazard emergencies and events.

Linda Landesman, DrPH, MSW, has once again applied, as she did in authoring the complimentary book, *Public Health Management of Disasters: The Practice Guide*, her extensive professional experience as a clinician, administrator, educator, policymaker, and author in the realm of public health, health care, and emergency management to provide the field another essential text book. Her service as assistant vice president for the New York City Health and Hospitals Corporation honed her leadership in the field of public health practice and administration. Dr. Landesman is a pioneer in clarifying the role of public health leadership and professional practice in multi-sector emergency management. Her work has been pivotal, along with support from the American Public Health Association, Association of Schools of Public Health, and Centers for Disease Control and Prevention (CDC), to create competencies and curriculum for formalized public health training in disaster preparedness and response. Dr. Landesman's research has tracked advancements in the field of public health preparedness, including policy, foundational principles, and roles and responsibilities of the public health workforce in relation to the organization of local and federal emergency management response systems and capabilities. Before

xii Foreword

the 2001 publication of both the first preparedness curriculum for schools of public health edited by Dr. Landesman and *Public Health Management of Disasters: The Practice Guide*, and now this text, professionals preparing the public health workforce faced a scarcity of adequate teaching resources and curriculum materials.

Isaac Weisfuse, MD, MPH, is an Associate Professor of Clinical Public Health in the Department of Epidemiology at Columbia University's Mailman School of Public Health. He is also Vice President for Science Policy at SIGA Technologies and was formerly a Deputy Commissioner at the New York City Department of Health and Mental Hygiene. His extensive experience and contribution to the field of public health infectious disease epidemiology, public health preparedness, and emergency management is an essential compliment to the editorial role with Dr. Landesman. Dr. Weisfuse's background in infectious disease control includes epidemiology and public health training through the Epidemic Intelligence Service (EIS) of the Centers for Disease Control and specific responsibilities for the control of Sexually Transmitted Diseases, Tuberculosis, HIV, Hepatitis, Vaccine Preventable Diseases, and other communicable diseases, including those caused by bioterrorism. His public health leadership and emergency operations management expertise derives from his oversight of NYC's Public Health Laboratory and direction of his agency's emergency preparedness activities. He served as an agency incident commander for all agency emergency responses from 2000–2012, which included the response to the World Trade Center Disaster, as well as pandemic influenza. Dr. Weisfuse's publications, including his role as a contributing author of *Terrorism and Public Health*, as well as his experience on the faculty of the Mailman School of Public Health at Columbia University, provided insight to this approach to educating both the present and future public health workforce. He was named after his great-grandfather who was a victim in the Ukraine of the mega-disaster 1918 flu pandemic.

This book is a critical must read, not only for those engaged in public health practice, but for all multi-sector response personnel. That is because all emergency and catastrophic events fundamentally pose a threat to the health, safety, and resilience of the populations involved. In *Case Studies in Public Health Preparedness and Response to Disasters*, Drs. Landesman and Weisfuse provide an essential textbook to advance the knowledge, skills, and abilities needed to create a prepared workforce. The text provides 16 competence-based and retrospective scenarios of an array of emergency

events, many of which were previously considered unthinkable due to inadequate assumptions about what was possible.

This case study format is both descriptive and explanatory; it presents an analysis of developmental factors critical to the understanding of the context, evolution, and principles underlying each of the events. Each case highlights key features about the emergency and the significance of transformational leadership, command and control operations, management decisions, and strategies used as the events unfolded. This is important to the book's design and purpose because elucidation of causation provides a lens through which inquiry and systemic analysis help to clarify the underlying principles involved. This format also demonstrates the capability and competence required in the broad scale and in unique elements of each case. The cases help to clarify the inherent multidisciplinary, cross-sector and inter-organizational nature of public health and emergency management, the profound contributions of competent transactional leadership, and the challenges that leaders face in preparing for normal to unthinkable incidents. The process of studying these cases will enhance our professional competence in systems and critical thinking thereby increasing our capabilities in all phases of emergency preparedness and response.

There is much to learn from the competence-based case studies through analysis of critical issues, challenges, lessons learned, and the application of principles of public health and emergency management. This process is enhanced by the use of discussion questions provided at the end of each case that support inquiry and dialogue about the roles and responsibilities in preparing for escalating public health threats. A substantial resource that grounds the learning experience is the instructor's guide that ties competencies demonstrated in each case study to expected competence for daily performance on the job, as well as crisis driven performance capacity and capability.

This book is being published at a critical moment. Public health threats and diseases are on the rise internationally and in the United States. For the first time in recorded history, as reported in the United Nation's Office for Disaster Risk Reduction's 2012 Report on Natural Disaster in the World, there were 3 consecutive years of economic losses due to weather and climate related disasters that surpassed \$100 billion, with the highest in 2011 exceeding \$371 billion. Between 2002 and 2011 on average, over 245 thousand individuals were affected and over 106 million deaths were caused by natural disasters. In the United States, 2012 was an

xiv Foreword

historic year for extreme weather, including Superstorm Sandy, Hurricane Isaac, and tornadoes impacting Texas, the Great Plains, the southeast, and the Ohio Valley. Climate change and warmer seasonal extremes are threatening environmental sustainability, economic and civic viability, and increasing loss of life and health impacts on survivors. In addition, with the 2011 CDC Framework for Preventing Infectious Diseases, the CDC warned of the need to control severe and emerging health threats associated with infectious disease outbreaks, the leading cause of death globally. The emergence of new infections, such as the novel 2009 H1N1 influenza virus, risks becoming “hard to control” global pandemics.

These unthinkable events pose serious threats to the United States and global resilience and security, and continue to challenge the adequacy of public health and emergency response system capabilities. The publication of this book, *Case Studies in Public Health Preparedness and Response to Disasters*, is a critical resource at this time to help increase competence and improve performance in the specialized preparation and education of present and future public health, emergency management, and other multi-disciplinary response personnel.

Kate Wright, EdD, MPH
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Preface

WHY THIS BOOK

Effective public health response following disasters received heightened national attention with the establishment of the National Health Security Strategy and the passage of the Pandemic and All Hazards Preparedness Act (PAHPA) of 2006 (reauthorized in 2013). Specialized training is needed to meet the requirement for a prepared workforce because the responsibilities are more complicated than in daily public health practice. Notably, as public health preparedness is still a fledging discipline, few materials are available that illustrate the actual tasks in responding to these specialized needs. Whether preparing an academic course or on-the-job training, faculty often have to hunt for teaching materials in numerous locations and from a variety of sources. This book facilitates that task by bringing together cases that demonstrate the core disciplines of public health practice. In addition, the material in these cases relates across occupations and is easily translatable to all disciplines involved in emergency management.

The 16 cases in this text both depict a broad range of public health scenarios likely to be encountered and are instructional in how emergency preparedness happens in the field. The goal of each case is to provide sufficient material so that even those unfamiliar with the events would have a good understanding of the issues and implications and be able to apply the principles of their field to the case. The cases demonstrate the application of competencies established by the Association of Schools of Public Health. By studying these cases, students can build a foundation to understand the principles and practice of both emergency management and public health.

Just as significant is the fact that emergency preparedness and response is a multi-disciplinary undertaking. While demonstrating competencies developed for public health professionals, this collection of cases links the instructional aims of many disciplines because of the cross organizational nature of emergency response. To be effective, health and allied health professionals, emergency managers, first responders, and public administrators must also understand how to respond to emergencies with public health

implications. This compilation of cases can be used to better prepare all involved in preparedness because the content is relatable to the breadth of responders.

TYPES OF CASES

Many of the contemporary issues facing emergency management and public health are presented in these cases. The incidents reported are examples of the strategies used to manage major issues encountered during emergencies. Each case reflects the perspective and opinions of the authors, many of whom were directly involved in the events described. Given the range of potential emergencies, the cases in this book are not representative of every possible scenario, but rather how to approach an emergency. Because emergencies require a cross-organizational response, many of the case studies are multi-faceted but can be grouped by key issues.

Three cases explore state level responses. The North Carolina flood following Hurricane Floyd is a personal look by Dennis McBride, then State Health Commissioner, at the challenges of managing an environmental disaster that evolved and deepened. Two cases involving public health laboratories demonstrate the complexity of surveillance and management. Amy Terry, Chris Atchison, and Michael Pentella examine the role of the Iowa state lab in communicating, educating, and managing specimens during a pandemic. In the second study, Chris Mangal, Chris Bean and Scott Beckertell us how science drove policy amid a multi-state investigation of an anthrax case.

The populations considered vulnerable during and following a disaster were broadly defined in the Pandemic and All Hazards Preparedness Act (PAHPA). The story of the Southern California wildfires explores the problems encountered in communicating to culturally and linguistically diverse populations during crisis situations, as told by Nadia Siddiqui, Dennis Andrulis and Guadalupe Pacheco. Included are the need for community collaboration and coordination with public authorities. The theme of community coordination has a different focus with vulnerable patients at a residential facility in Pennsylvania described by Tamar Klaiman and Sylvia Twersky-Bumgardner.

The Gulf Coast of the United States was still recovering from Hurricane Katrina when the Deepwater Horizon Oil Spill struck in 2010. The long-standing environmental impact of this oil spill

caused health problems for humans and wildlife, extensive damage to marine and wildlife habitats, and severely interrupted the way of life. James Diaz explores the scientific controversy and the public-private sector interaction in managing these complex events.

Four cases highlight national coordination, a hallmark in the most complex emergencies. Two focus on the 2001 attacks and subsequent collapse of the towers at the World Trade Center, which reshaped emergency preparedness in the United States. Robyn Gershon tells the behind-the-scenes story of evacuating the towers. Neal Cohen recalls his time as Commissioner of Health during the attacks and his task of meeting the mental health needs of the community in the days and months that followed. When the Republican National Convention was scheduled for New York City less than 3 years later, the Department of Health and Mental Hygiene was on alert. Shadi Chamany writes of the interdisciplinary efforts to prepare for and respond to that high security, national event. Finally, Michael Jhung tells a personal story of conducting national surveillance for pandemic influenza at the Centers for Disease Control and Prevention.

Healthcare systems present a specialized set of concerns. Doris Varlese and Kevin Chason provide a view of the local implementation of state regulations involving multiple stakeholders, including unions. They explore the intersection between law, healthcare delivery, and institutional policy making. Melissa Higdon and Michael Stoto's story about the Martha's Vineyard response to H1N1 portrays the challenges of organizing a system approach to public health preparedness. It explores how a healthcare system intersects with state and federal agencies. Joseph Marcellino relates the massive challenge of evacuating, shuttering, and reopening a 375-bed acute care public hospital within several days before and after a hurricane.

The three international cases span eight years. The most current is the 2012 Japanese earthquake, tsunami, and radiation catastrophe. Eric Noji provides the framework for the Tomodachi international response, which demonstrates the intersection between natural and technological disasters. Given the flooding in the northeastern United States following Superstorm Sandy (2013), the Tomodachi case provides lessons not learned by the Japanese. In Japan, survivors of previous tsunamis warned future generations of the risk by marking stones to document previous record tsunami levels, but future generations disregarded the warnings and built below the markers. Annette Ramírez de Arellano weaves the story of the prolonged events during the 2010 mine collapse

in Chile. This multi-disciplinary tale demonstrates this extraordinary international response, and deals with the physical and emotional needs of both victims and families over an extensive period. Finally, Pietro Marghella and Isaac Ashkenazi discuss the healthcare response to a mass casualty terrorism event following the Madrid train bombings in 2004 - a case that has new meaning following the Boston marathon bombings in 2013.

USE OF CASES

The cases in this book are based on actual events and provide real-world application of public health and emergency management principles. As a group, they describe what is involved in a public health response beyond what is reported in trade magazines, peer reviewed literature, or the *Morbidity and Mortality Weekly Report*. The cases bring realism to courses with an emphasis on functioning in multi-disciplinary settings. Such cases provide guidance to those who have not encountered these problems before by offering comprehensive information about what happened, how things were managed, and why decisions were made a certain way.

These case studies can be used both in the classroom and in online courses. The content includes a description of the events and an understanding of the issues and challenges, as well as a description of the process for handling these challenges. Each scenario is followed by discussion questions that can be easily incorporated into the classroom setting for an open dialogue between students. Questions are designed to stimulate both a review of the material and foundational principles. In some cases, the answer to a problem or the path to manage it is not evident. Some readers might think of handling the scenario differently. When finding one's own solution, it helps to know what others did in similar circumstances.

The cases are crafted so that they can be taught as a unified course with the theme of preparedness, or as a single session where specific themes are embodied in one case. Given the cross-disciplinary nature of emergency preparedness and response, instructors might want to teach these cases from a cross discipline perspective. Case seminars could be organized through inter-school coordinating committees so that students and practitioners alike are trained with other sectors involved in emergency response—public health, public administration, emergency management, social work and psychology, healthcare professionals, engineering, and others.

Acknowledgments

A book is a labor of love for everyone involved in transforming an idea into reality. Without the patience and dedication of each of the contributors, this casebook would not have been possible. Each case embodies the passion of the professionals who wrote it and we thank them for sharing their important stories.

The idea for this book started with a conversation that Mike Brown and Linda had in the exhibit hall during an APHA annual meeting. Mike's vision and encouragement have been much appreciated throughout the process. We are grateful for the support of our publisher at Jones & Bartlett Learning, Bill BrottMiller. His team—Chloe Falivene, Alyssa Lawrence, Kayla Dos Santos, Maro Gartside, and Sophie Teague—have been a delight to work with. We value their professionalism, their advice, and their hard work in this lengthy process.

The Association of Schools of Public Health (ASPH) has been a leader in preparing the public health workforce to carry out their role during emergencies. The ability to build cases that demonstrate various components of the ASPH competency model has strengthened the collection and will be an important stepping-stone in understanding the lessons related in these stories. Many thanks also go to Elizabeth Weist for her tireless efforts with the Appendix for this book.

In working with the contributors to finalize the cases, I had the pleasure of speaking with Elizabeth Talbot, the chief epidemiologist in the anthrax case, and truly appreciate her taking the time to share details about the investigation that she led.

For many years, Kate Wright has been a nationally recognized champion of preparing a competent workforce for the challenges of public health practice, especially in preparedness. We are honored to have her support for this work.

Finally, the end product is always better because of input from reviewers. We were fortunate to receive valuable feedback from professionals with a broad perspective and their views helped us refine the cases. Much thanks to:

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Given the dramatic increase in catastrophic disasters in recent memory, it is crucial that everyone involved in preparedness and response understand the public health issues and work collectively to ensure that public health needs are met. We hope that these cases spur lively discussion and trigger universal preparation.

Linda Young Landesman and Isaac Weisfuse

About the Editors

LINDA LANDESMAN, DRPH, MSW

Dr. Landesman has a long and distinguished career in public health working as a clinician, administrator, educator, policy maker, and author. In 2012, Linda retired from her work as the assistant vice president at the Office of Professional Services and Affiliations at the New York City Health and Hospitals Corporation (HHC), a position she held since 1996. At the HHC, she was responsible for over \$870 million in workforce contracts between HHC and medical schools and professional medical groups. Linda has been responsible for the oversight, restructuring, negotiation, implementation, monitoring, and evaluation of these affiliation contracts. While at the HHC, Dr. Landesman was recognized for her innovative work when she received an award for business process improvement from the Technology Managers Forum.

Dr. Landesman began her career practicing clinical social work in academic medical centers in Southern California. Linda worked with women with alcoholism, children who had cystic fibrosis and their families, women with high-risk pregnancies, and families whose babies required care in the neonatal intensive care unit. Dr. Landesman was the principal investigator for the first national curriculum on the public health management of disasters, developed through a cooperative agreement with the Association of Schools of Public Health and sponsored by the Centers for Disease Control and Prevention. She also developed national standards for emergency services response.

Dr. Landesman has been appointed and served on numerous committees and community boards, including the Westchester Children's Association; New York City Metro Regional Advisory Committee for the New York State Health Benefit Exchange; School of Public Service Leadership Advisory Council, Capella University; Masters of Public Health Program Community Advisory Board at Long Island University; New York State Regional Advisory Committee for the Health Care Commission for the Twenty-First Century; Commissioners' Advisory Committee, New York City Department of Health and Mental Hygiene;

Advisory Committee, World Trade Center Evacuation Study; WMD Advisory Council, New York City Department of Public Health; Emergency Preparedness Council, New York City Health and Hospitals Corporation; Research Subcommittee, Advisory Group Subcommittee, OEM Subcommittee, Curriculum Subcommittee, and WTC Subcommittee, Center for Public Health Preparedness, Mailman School of Public Health of Columbia University; Violence Prevention Subcommittee, Albert Einstein College of Medicine; Environmental Subcommittee, New York Academy of Medicine; F30 accelerated writing groups and content expert, ASTM; and the Disabled in Disaster Advisory Group, Orange County, California.

Dr. Landesman is a member of the Public Health Association of New York City, New York State Public Health Association, and Herman Biggs Society, and a Fellow at the New York Academy of Medicine. She has edited and/or authored eight books, including the landmark book, *Public Health Management of Disasters: The Practice Guide*, now in its third edition. She has written dozens of journal articles and book chapters. Dr. Landesman earned her BA and MSW degrees from the University of Michigan. She received her DrPH in health policy and management from the Columbia University Mailman School of Public Health. Her doctoral dissertation focused on hospital preparedness for chemical accidents and won the Doctoral Dissertation Award from the Health Services Improvement Fund in 1990. She is currently on faculty of the Public Health Practice Program at the University of Massachusetts–Amherst where she teaches research methods and public health emergency management online.

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Dr. Weisfuse is an associate professor of clinical public health in the Department of Epidemiology at the Mailman School of Public Health at Columbia University and is vice president of science policy for SIGA Technologies. He served in the New York City Department of Health and Mental Hygiene and retired in 2012 after a 24-year career. His last position was deputy commissioner of the Office of Emergency Preparedness and Response, which helps New York City prepare and respond to the health aspect of emergencies.

Dr. Weisfuse trained in internal medicine and served as an epidemic intelligence service officer at the Centers for Disease Control and Prevention (CDC) in the hepatitis branch. He joined the New

About the Editors xxiii

York City Department of Health and Mental Hygiene (DOHMH) in 1987 as a medical epidemiologist, working on HIV/AIDS issues. During his tenure he was in charge of or supervised a wide variety of programs, including programs for sexually transmitted diseases, HIV, tuberculosis, communicable diseases, lead-poisoning prevention, vital statistics, public health laboratories, emergency management, and immunization.

Dr. Weisfuse twice received awards from DOHMH for his work: the Public Health Achievement Award for work on sexually transmitted diseases and the Public Health Award for Excellence for his role in the 9/11 response. He was also awarded the Master Teacher Award in Preventive Medicine from the State University of New York at Downstate. He taught infectious disease epidemiology at Columbia University's Mailman School of Public Health for 10 years, wrote numerous articles and book chapters, and mentored seven CDC preventive medicine residents. He served as incident commander for all emergency activations since 2000 including 9/11, the 2003 blackout, inhalational anthrax in a drummer, the Republican National Convention, H1N1 influenza pandemic, and Hurricane Irene, as well as being a liaison to the National Broadcasting Company during the 2001 anthrax attack. He was asked by the CDC to lead their H1N1 vaccine task force, which he did from mid-December 2009 until April 2010. Dr. Weisfuse served on 'Team B,' which provided expert advice to the CDC during the 2009 influenza pandemic. He has extensive experience in counter-measure distribution and evaluation of hospital capacity to respond to large-scale emergencies.



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