

PUBLIC HEALTH EMERGENCY PREPAREDNESS

A Practical Approach for the Real World

Suzet McKinney, DrPH, MPH

CEO/Executive Director

Illinois Medical District

Chicago, Illinois

Mary Elise Papke, DrPH, MPH, MA

Senior Public Health Specialist

Joseph J. Zilber School of Public Health

University of Wisconsin–Milwaukee

Milwaukee, Wisconsin



JONES & BARTLETT
LEARNING



World Headquarters

Jones & Bartlett Learning
5 Wall Street
Burlington, MA 01803
978-443-5000
info@jblearning.com
www.jblearning.com

Jones & Bartlett Learning books and products are available through most bookstores and online booksellers. To contact Jones & Bartlett Learning directly, call 800-832-0034, fax 978-443-8000, or visit our website, www.jblearning.com.

Substantial discounts on bulk quantities of Jones & Bartlett Learning publications are available to corporations, professional associations, and other qualified organizations. For details and specific discount information, contact the special sales department at Jones & Bartlett Learning via the above contact information or send an email to specialsales@jblearning.com.

Copyright © 2019 by Jones & Bartlett Learning, LLC, an Ascend Learning Company

All rights reserved. No part of the material protected by this copyright may be reproduced or utilized in any form, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without written permission from the copyright owner.

The content, statements, views, and opinions herein are the sole expression of the respective authors and not that of Jones & Bartlett Learning, LLC. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not constitute or imply its endorsement or recommendation by Jones & Bartlett Learning, LLC and such reference shall not be used for advertising or product endorsement purposes. All trademarks displayed are the trademarks of the parties noted herein. *Public Health Emergency Preparedness: A Practical Approach for the Real World* is an independent publication and has not been authorized, sponsored, or otherwise approved by the owners of the trademarks or service marks referenced in this product.

There may be images in this book that feature models; these models do not necessarily endorse, represent, or participate in the activities represented in the images. Any screenshots in this product are for educational and instructive purposes only. Any individuals and scenarios featured in the case studies throughout this product may be real or fictitious, but are used for instructional purposes only.

This publication is designed to provide accurate and authoritative information in regard to the Subject Matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the service of a competent professional person should be sought.

Production Credits

VP, Product Management: David D. Cella
Director of Product Management: Michael Brown
Product Specialist: Carter McAlister
Production Manager: Carolyn Rogers Pershouse
Director of Vendor Management: Amy Rose
Vendor Manager: Molly Hogue
Senior Marketing Manager: Sophie Fleck Teague
Manufacturing and Inventory Control Supervisor:
Amy Bacus

Composition: codeMantra U.S. LLC
Project Management: codeMantra U.S. LLC
Cover Design: Scott Moden
Rights & Media Specialist: Robert Boder
Media Development Editor: Troy Liston
Cover Image (Title Page, Part Opener, Chapter
Opener): © CandyBox Images/Shutterstock
Printing and Binding: Edwards Brothers Malloy
Cover Printing: Edwards Brothers Malloy

Library of Congress Cataloging-in-Publication Data

Names: McKinney, Suzet, author. | Papke, Mary Elise, author.

Title: Public health emergency preparedness: a practical approach for the real world / Suzet McKinney, Mary Elise Papke.

Description: Burlington, Massachusetts: Jones & Bartlett Learning, [2019] | Includes bibliographical references and index.

Identifiers: LCCN 2018000272 | ISBN 9781284069259 (paperback: alk. paper)

Subjects: | MESH: Civil Defense | Emergencies | Emergency Medical Services

Classification: LCC RC451.4.D57 | NLM WA 295 | DDC 362.2/04251—dc23

LC record available at <https://lccn.loc.gov/2018000272>

6048

Printed in the United States of America

22 21 20 19 18 10 9 8 7 6 5 4 3 2 1

*To Joia, You are the reason I live, breathe, and
soar. My hope is that for you, I am a living
example of what can be if you just believe.
Grab hold of your dreams, Little One, and
soar!*

*To David, whose support and love have been
the constant in all our years together.*





© CandyBox Images/Shutterstock

Contents

Preface	viii
Acknowledgments	xi
About the Authors	xii

PART I Introduction **1**

Chapter 1 What Is Public Health Emergency Preparedness? 3

What Is Public Health?	3
What Is Emergency Preparedness?	4
History of Preparedness Programs/ Preparedness Funding	4
The Incident Command System and the National Incident Management System	7
Presidential Policy Directive-8 (PPD-8) and the Whole Community Approach to Preparedness	9
Role of State and Local Governments in Preparedness and Response	9
What Is the Role of Public Health in Emergency Preparedness?	10
Importance of Public Health Infrastructure and Capacity Building	11
Federal Response Structure: National Response Plan (NRP), National Response Framework (NRF)	12
The Public Health Workforce and Development of Preparedness Competencies and Association of Schools and Programs of Public Health Core Competencies	14
Conclusion	14
Discussion Questions	15
References	15

Chapter 2 Legal Issues in Public Health Emergency Preparedness 17

Introduction	17
Policy and Statutory Framework	22
Disaster Relief and Disaster Declarations	28
Legal Considerations in Emergency Preparedness Planning	30
Legal Preparedness	32
Conclusion	33
Discussion Questions	33
References	34

PART II Hazards and Threats **37**

Chapter 3 Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Events 39

Introduction	39
Chemical Agents	40
Conclusion	50
Discussion Questions	50
References	51

Chapter 4 Natural Disasters and Unintentional Emergencies 53

Natural Disasters	53
Unintentional Emergencies	58
Conclusion	60

Discussion Questions 60
References 61

**Chapter 5 Pandemic
Influenza 63**

Health Security 63
Conclusion 69
Discussion Questions 69
References 69

**Chapter 6 Epidemiology and
Surveillance in
Preparedness and
Response 71**

What Is Epidemiology? 71
Outbreak Investigations 72
The Role of Social Epidemiology 73
The Role of Surveillance 73
Types of Surveillance 74
Role of Laboratories 75
Laboratory Response Network 75
National Strategy for Biosurveillance 75
Ethical Considerations in
Decision-Making 76
Conclusion 77
Discussion Questions 77
References 77

**PART III The Preparedness
Cycle 79**

**Chapter 7 Hazard Assessment
and Planning 81**

Planning and Preparing for Disasters 81
Assessing Risk 83
National Preparedness Goal Core
Capabilities 85
Planning 91
Human Capital Risks 96
Centers for Disease Control and
Prevention National Capabilities and

Assistant Secretary for Preparedness
and Response Capabilities 98
Conclusion 100
Discussion Questions 101
References 101

**Chapter 8 Training, Exercising,
and Evaluating. 103**

Introduction 103
Training 104
Exercising 104
Evaluation 108
Conclusion 110
Discussion Questions 111
References 111

**PART IV Incident
Management 113**

**Chapter 9 Multiagency
Coordination Systems,
Information Sharing,
and Interoperability .. 115**

National Incident Management
System (NIMS) 116
Incident Command System (ICS) 117
Multiagency Coordination Systems
(MACSs) 118
Situational Awareness 121
Information Sharing 121
Communication and Information
Systems 122
Common Operating Picture 123
Interoperable Communication 123
Information Sharing Agreements 124
Communication Systems and
Communications Redundancy 124
Public Health Information Network
(PHIN) 125
Syndromic Surveillance Systems 125
Conclusion 126

Discussion Questions 126
 References 127

Chapter 10 Community Preparedness and Recovery..... 129

Community Preparedness 129
 Community Recovery..... 130
 Psychosocial Impacts of Disasters 131
 Psychological First Aid 132
 At-Risk Populations 134
 Trusted Agents 136
 Conclusion 137
 Discussion Questions 137
 References 137

Chapter 11 Crisis and Emergency Risk Communication... 139

Emergency Public Information and Warning 139
 Public Information..... 140
 Crisis and Emergency Risk Communication 142
 Working with the Media 144
 Other Mechanisms for Communicating 145
 Communication Planning 147
 Cultural Competence and Cultural Humility 149
 Conclusion 151
 Discussion Questions 151
 References 151

Chapter 12 Medical Countermeasures....153

Strategic National Stockpile..... 154
 Distribution Logistics: Receiving, Staging, and Storage..... 155
 Federal Development Efforts..... 158
 Alternate MCM Delivery Methods..... 160
 Community Mitigation 161

Conclusion 162
 Discussion Questions 162
 References 162

Chapter 13 Medical Surge 165

Medical Surge Management..... 166
 Healthcare System Preparedness..... 166
 Healthcare Coalitions 167
 Management Systems 168
 Critical Responsibilities 170
 Crisis Standards of Care 170
 Mutual Aid and Federal Assistance 171
 Volunteer Management 173
 Responder Safety and Health 174
 Personal Protective Equipment 175
 Emergency Responder Health Monitoring and Surveillance 175
 Mental Health 175
 Conclusion 176
 Discussion Questions 176
 References 176

PART V Conclusion 179

Chapter 14 Leadership for the Future of Public Health Preparedness..... 181

The Prepared Leader..... 181
 Transactional Versus Transformational Leadership..... 182
 Crisis Leadership..... 184
 Meta-Leadership 184
 Performance Management and Metrics 186
 Conclusion 186
 Discussion Questions 187
 References 187

Index..... 189



© CandyBox Images/Shutterstock

Preface

When we set out to write this text, our goal was very simple. We wanted to capture the experiences we have had in the field and with curriculum development in public health emergency preparedness. As public health practitioners and leaders, we know the importance of building relationships, thinking about the context of different situations, and employing strategy and a systems approach to managing complex problems. As developers of curriculum, we appreciate the challenge of synthesizing a wealth of material to stimulate learning and provoke reflection about emergency preparedness. Drawing on our experiences of practicing public health emergency preparedness and developing graduate-level certificate courses, we hope with this text to present ideas and concepts that you can translate into practice. When it comes to implementing strategies and solutions during emergencies and disasters, your practice is what is going to get you to the other side of the disaster, hopefully in a way in which illness and injury resulting from the disaster are minimized. That is the reason this text focuses on practical applications.

This text is organized into five parts. Part I, the introduction, includes the first chapter that defines public health emergency preparedness and invites readers to consider the role of public health in prevention, preparedness, response, and recovery. Chapter 2 addresses the legal issues in public health emergency preparedness. Knowledge of statutory and legal powers is invaluable for leaders charged with building and maintaining relationships, planning response actions, and seeing those actions through. It is the legal framework that guides preparedness and response strategies and tactics; understanding the legal powers afforded to the three levels of government is necessary to fully grasp when and where these legal powers will impact planning and response.

Part II of the text shifts to specific hazards and threats. Chapter 3 focuses on chemical, biological, radiological, nuclear, and explosives threats, also known as CBRNE. These threats, most commonly associated with terrorism, primarily represent high-impact, but low-probability events. Nonetheless, effective preparedness and response capability for these threats are critical. The anthrax attacks of 2001, the Boston Marathon bombing, and transportation system attacks across the globe are all stark reminders of the degree of devastation imparted among communities and economies when these malicious acts occur. Chapter 4 covers natural disasters, from hurricanes to earthquakes to floods, as well as unintentional emergencies. Each disaster requires emphasis on particular aspects of the recovery, with related environmental and infrastructure implications. Train derailments and foodborne outbreaks also entail particular responses. With an all-hazards approach to preparedness planning, jurisdictions should have key relationships in place and access to resources to facilitate ethical and coordinated responses. In all instances, mental

health considerations for first responders and residents alike are important to ensure that people can restore their lives as quickly as possible. Chapter 5 is concerned with pandemic influenza. In the United States, large numbers of people succumb to seasonal flu each year. The potential for the introduction of new, novel strains of flu into our society poses specific risks that must be carefully planned for and mitigated. In this chapter, we aim to help practitioners understand how flu viruses reach pandemic level and the extreme societal impacts that pandemics can have. Chapter 6 concludes this part of the text with a discussion of emerging and reemerging infectious diseases and surveillance. The ease of global travel increases the likelihood that viruses and diseases once associated with remote, exotic locations can now be introduced in the United States. As we saw with the Ebola and Zika outbreaks in 2014 and 2015, respectively, emerging and reemerging infectious diseases can quickly overwhelm our emergency response and healthcare systems. Our unfamiliarity with these threats and limited understanding of the science behind them force us to quickly shift course to build specific capacity that stresses both our systems and economies (e.g., Ebola treatment centers).

Part III of the text turns attention to the preparedness cycle. In Chapter 7, readers learn about hazard assessment and planning, and Chapter 8 discusses training, exercising, and evaluation. What is so important about this part of the text is the presentation of the framework that is at the heart of preparedness work. There is a wealth of federal resources on these topics, from Federal Emergency Management Agency online courses to the materials from the Homeland Security Exercise and Evaluation Program (HSEEP).

In Part IV, incident management is presented beginning with multiagency coordination in Chapter 9. It is often stated that “an emergency is not the time to distribute business cards.” Relationship building and understanding of partners are critical during emergency response and having those relationships in place contributes to effective incident management when it matters most. Chapter 10 discusses the psychosocial impacts of disasters, underscoring the importance of mental health resources as part of response and recovery efforts. Chapter 11 is about crisis and emergency risk communication. Communication is often the single failure point in many disaster responses. Our goal in this chapter is to give the reader an understanding of the basic strategies associated with crisis and risk communication, as well as how communication with the public is vital to the success of both the emergency response and the community’s ability to quickly recover. Medical countermeasures are the topic in Chapter 12. Much planning goes into communities’ creation of points of dispensing, with the attendant issues related to the logistics of meeting the needs of many people in a short time frame, an undertaking that is outside of the realm of expertise of public health. Part IV concludes with Chapter 13, which focuses on medical surge. In emergency situations, healthcare facilities need to be able to adequately provide medical evaluation and care. This chapter discusses the challenges faced by public health and the healthcare system to develop and maintain the capability to provide medical care during and after emergencies and disasters.

Finally, Chapter 14 in Part V, the conclusion, offers some thoughts on leadership. Specifically, meta-leadership is offered as a framework for approaching preparedness planning, response, and recovery. As threats become increasingly more severe and impactful, we will constantly be challenged with the need to employ

more creative mechanisms for mitigating their effects. Leaders need to plan, be flexible, and remain calm in the face of disaster. We use this chapter to help practitioners understand the important role of leadership in emergency response and what distinguishes leaders from managers, and the visioning work that must take place to become a “prepared leader.”

There is much to learn about this ever-changing field. As the recovery continues from Hurricanes Harvey, Irma, and Maria, we are struck by the staggering amount of work to be done to clean up and restore lives in devastated communities across eastern Texas, Florida, Puerto Rico, and the Virgin Islands. At the same time, there are countless stories of resilience in the face of extreme rain, flooding, and winds. Public and private entities are working together to bring in needed supplies, begin rebuilding, and restore services. Ever present are the social, economic, and political factors that both shape our response and influence our perceptions of responses at the local, state, and federal levels. Analysis of and reflection on each event are important to ensure that critical decisions that protect marginalized communities, restore essential services, and support our fellow citizens, especially the most vulnerable among us, can be made the next time.

We hope that we have provided you with simple, yet thought-provoking approaches to the various challenges you will face as a practitioner in this field. We encourage you to use it to expand your knowledge, challenge your thinking, and act creatively and with compassion in your approach to emergencies and disaster response.



© CandyBox Images/Shutterstock

Acknowledgments

We would like to thank our longtime mentor and advisor, Dr. Bernard “Barney” Turnock, for his support and encouragement. He served as the chair of both of our doctoral dissertation committees, and was instrumental in urging us on and insisting that we always strive for excellence in the practice of public health. Barney admonished us when he felt like we needed a good kick in the pants, and pushed us when we both wanted to give up. It was Barney who introduced us to Jones & Bartlett Learning and our no-holds-barred, hard-driving publisher, Mike Brown. To Mike and our editorial team at Jones & Bartlett Learning, Carter McAlister, Lindsay Sousa, and Merideth Tumas, your patience and understanding are more appreciated than you know. Thank you for believing in this project, even when we were not sure ourselves.

Dr. McKinney thanks her husband and daughter for all their love, support, and encouragement, not just through the writing of this book, but for everything. You are the reason why I do the work that I do. I love you, and hope that I make you proud, always.

Dr. McKinney also wishes to thank Virginia Papke, the BEST research assistant there is! Finally, Dr. McKinney wishes to acknowledge her time spent at the Chicago Department of Public Health, where she worked for nearly 14 years developing her knowledge and expertise in public health emergency preparedness and response. To Dr. Terry Mason, thank you for believing that I could lead such a large and complex operation and for demanding that I do so.

Dr. Papke would like to acknowledge Suzet for inviting her to join her as coauthor. We began our collaboration developing the curriculum for a graduate preparedness certificate and continued our dialogue about public health emergency preparedness in this book. It has been a stimulating and rewarding experience!

Dr. Papke also thanks her daughter, Virginia Papke, whose research and technical support were critical to the success of this book. She was always willing to jump into whatever task we had, no matter how picky or wide open.

Dr. Papke thanks her colleagues on the sixth floor in the UIC MidAmerica Center for Public Health Practice for introducing her to the world of public health emergency preparedness and for providing her with a wonderfully supportive work environment.



© CandyBox Images/Shutterstock

About the Authors



Dr. Suzet M. McKinney currently serves as Chief Executive Officer/Executive Director of the Illinois Medical District. The Illinois Medical District (IMD), a 24/7/365 environment that includes 560 acres of hospitals, medical research facilities, labs, a biotech business incubator, universities, raw land development areas, and more than 40 healthcare-related facilities, is one of the largest urban medical districts in the United States. Dr. McKinney is the former Deputy Commissioner of the Bureau of Public Health Preparedness and Emergency Response at the Chicago Department of Public Health, where she oversaw the emergency preparedness efforts for the department and coordinated those efforts within the larger spectrum of

the City of Chicago's Public Safety activities. Dr. McKinney previously served as the Senior Advisor for Public Health and Preparedness at the Tauri Group, where she provided strategic and analytical consulting services to the U.S. Department of Homeland Security's BioWatch Program. Her work at the Department of Homeland Security included providing creative, responsive, and operationally based problem-solving for public health, emergency management, and homeland security issues, specifically chemical and biological early detection systems and the implementation of those systems at the state and local levels.

Dr. McKinney has earned a reputation as an experienced, knowledgeable public health official with exceptional communication skills. She has served as an on-camera media expert on emergency issues including biological and chemical threats, natural disasters, pandemic influenza, and climate-related emergencies. A sought-after expert in her field, she has also provided support to the U.S. Department of Defense's Defense Threat Reduction Agency, offering subject matter expertise in biological terrorism preparedness to international partners.

In academia, Dr. McKinney serves as an instructor in the Division of Translational Policy and Leadership Development at Harvard University's T.H. Chan School of Public Health. She also serves as a mentor for the Biomedical Sciences Careers Project at Harvard University. Additionally, Dr. McKinney holds an appointment as Adjunct Assistant Professor of Environmental and Occupational Health Sciences at the University of Illinois at Chicago School of Public Health.

Dr. McKinney holds her doctorate degree from the University of Illinois at Chicago School of Public Health, with a focus on preparedness planning, leadership, and workforce development. She received her Bachelor of Arts in Biology from Brandeis University (Waltham, Massachusetts), where she was also a Howard Hughes Medical Institute Fellow. She received her Master of Public Health degree in Health Care Administration and certificates in Managed Care and Health Care Administration from Benedictine University (Lisle, Illinois).



Dr. Mary Elise Papke is the Director of Accreditation Assessment and Community Engagement at the University of Wisconsin–Milwaukee Joseph J. Zilber School of Public Health. The Zilber School received its initial accreditation from the Council on Education for Public Health in 2017. She is also Senior Special Lecturer for the Master of Public Health Field Experience and Capstone courses. Dr. Papke served as adjunct faculty in the fall of 2016 at the Marquette University Law School where she co-taught a seminar in law and public health. She has extensive experience in academic public health, having served as Master of Public Health Director at the Indiana University–Purdue University at Indianapolis School of Medicine, in

the Department of Public Health (now the Richard M. Fairbanks School of Public Health), and as instructional designer at the University of Illinois at Chicago School of Public Health, with the former Illinois Preparedness and Emergency Response Learning Center in the Mid-America Center for Public Health Practice. In this capacity, Dr. Papke worked on projects with the Cook County Health Department and Illinois Department of Public Health.

Currently, Dr. Papke is the affiliate representative from the Wisconsin Public Health Association to the Governing Council of the American Public Health Association. In this capacity, she is also a member of the Great Lakes Public Health Coalition. She is past president of both the Wisconsin and Indiana Public Health Associations.

Dr. Papke received her doctorate in public health from the University of Illinois at Chicago School of Public Health with a focus on organizational learning in local health departments. She earned a Master of Public Health degree in Health Services Administration from the Yale University School of Public Health, the Master of Arts degree in French Literature from New York University, and a Bachelor of Arts degree from Manhattanville College.

