

# **Public Health 101**

## *Improving Community Health*

THIRD EDITION

**Richard Riegelman, MD, MPH, PhD**

Professor and Founding Dean  
Milken Institute School of Public Health  
The George Washington University  
Washington, DC

**Brenda Kirkwood, MPH, DrPH**

Clinical Associate Professor  
School of Public Health  
University at Albany, State University of New York  
Albany, NY



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World Headquarters  
Jones & Bartlett Learning  
5 Wall Street  
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*To Nancy Alfred Persily, whose enthusiasm for teaching public health  
to undergraduates inspired Public Health 101: Improving  
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# Acknowledgments

*Public Health 101: Improving Community Health, 3rd Edition* is the culmination of two decades of effort aimed at introducing public health to undergraduates. The effort originated with the teaching of an introductory course in public health in 1998 at the then newly created George Washington University School of Public Health and Health Services. The new course, organized by associate dean Nancy Alfred Persily, inspired efforts to teach and to learn from a new generation. The approach was designed as part of a liberal arts education, stimulating the movement that came to be called the Educated Citizen and Public Health.

Efforts to think through the content of an introductory course in public health have involved a large number of people throughout the United States. Public health, arts and sciences, and clinical educators all participated in the 2006 Consensus Conference on Public Health Education, which put forward the framework for *Public Health 101* upon which this book is based. Among those who led and continue to lead this effort is Susan Albertine, whose insights into the relationship between public health and liberal education have formed the basis for much of the Educated Citizen and Public Health movement.

I have taught *Public Health 101* since 2002, which has provided me with an opportunity to teach and to learn from well over 500 undergraduate students at The George Washington University. Their feedback and input has been central to writing and rewriting this book. I would also like to thank Alan Greenberg and Heather Young, the chair and vice chair of the Department of Epidemiology and Biostatistics at The George Washington University Milken Institute School of Public Health, for their support of my

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Confronting the challenge of putting together *Public Health 101* has been one of the great joys of my professional life. I hope it will bring both joy and challenge to you as you enter into the important and engaging world of public health.

*Richard Riegelman, MD, MPH, PhD*



# Preface: What Is *Public Health 101: Improving Community Health All About?*

Public health is more than a profession; it is a way of thinking. *Public Health 101: Improving Community Health* introduces you to the profession and also the way of thinking that we will call population health. Population health is an important way of looking at the world, whether you are going into public health as a profession, a clinically oriented health profession, business, law, international affairs, or a range of other professions.

Population health is also a key way of thinking, which prepares you for the challenges of citizenship in a democracy. Many of the issues that come before us as a society stem from or benefit from a population health perspective. Whether we are dealing with AIDS, the impact of aging, climate change, or the costs of health care, the population perspective can help us frame the issues and analyze the options to intervene. Population health requires an evidence-based approach to collecting and using the facts to develop and implement approaches to improve community health.

In addition, the population perspective leads us to look broadly at the way issues intertwine and interact with each other. We call this systems thinking. In population health, systems thinking is taking center stage as we increasingly struggle with complex problems that require us to look beyond the traditional boundaries of health and disease and the traditional lines between the roles of the health professions.

Until recently, public health was considered a discipline taught only at the graduate level. Today, undergraduate public health is booming at 4-year colleges and is beginning to take hold at community colleges as well. Its roots in general and liberal education go back to the 1980s, when David Fraser, the president of Swarthmore and an epidemiologist who led the

investigation of Legionnaires' disease, wrote a now classic article called "Epidemiology as a Liberal Art."<sup>1</sup>

In 2003, the National Academy of Medicine, formerly called the Institute of Medicine, recommended that "all undergraduates should have access to education in public health."<sup>2</sup> That recommendation encouraged the development of the Educated Citizen and Public Health initiative, a collaboration of undergraduate educators and public health educators to define and stimulate public health curricula for all undergraduates. *Public Health 101* was written to implement the recommendations that came out of this initiative and continues to form the basis for undergraduate education in public health.

The third edition of *Public Health 101* has a new subtitle, *Improving Community Health*. *Improving Community Health* is designed to highlight the importance of community-wide collaboration to promote and protect health as well as to prevent disease and disability. The third edition more fully addresses the work of a wide range of health professionals whose roles are an indispensable part of improving community health.

This third edition of *Public Health 101* has been thoroughly updated and expanded. Each chapter includes new material designed to expand your understanding of public health. From e-cigarettes to the opioid epidemic, from aging as a public health issue to the One Health movement, *Public Health 101* aims to make public health relevant to today's students and today's world. Each of the five sections includes new case studies challenging you to apply what you have learned.

*Public Health 101: Improving Community Health* will not try to overload your mind with facts. It is about providing you with frameworks for thinking,

and applying these frameworks to real situations and thought-provoking scenarios. Each chapter begins and ends with vignettes designed to show you the types of situations you will confront in public health. After each section, there are case studies that relate to one or more chapters in the section. They provide realistic, engaging exercises and open-ended questions to help you think through the application of the key concepts presented in each section.

Hopefully, you will come away from reading *Public Health 101* with an appreciation of how the health of the public is influenced by and can be improved by

efforts directed at the population level, as well as at the individual level. Let us begin in Chapter 1 by exploring the ways that public health affects everyone's daily life.

## ▶ References

1. Fraser DW. Epidemiology as a liberal art. *N Engl J Med*. 1987; 316:309–314.
2. Gebbie K, Rosenstock L, Hernandez LM. *Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century*. Washington, DC: National Academy Press; 2003.



# About the Authors

**Richard Riegelman, MD, MPH, PhD**, is professor of epidemiology–biostatistics, medicine, and health policy, and founding dean of The George Washington University Milken Institute School of Public Health. His education includes an MD from the University of Wisconsin, plus an MPH and PhD in epidemiology from The Johns Hopkins University. Dr. Riegelman practiced primary care internal medicine for over 20 years.

Dr. Riegelman has over 75 publications, including 6 books for students and practitioners of medicine and public health. He is editor of the Jones & Bartlett Learning *Essential Public Health* series. The series provides books and ancillary materials for the full spectrum of curricula for undergraduate public health education.

Dr. Riegelman has spearheaded efforts to fulfill the National Academy of Medicine’s recommendation that “all undergraduates should have access to education in public health.” He continues to work with public health and undergraduate education associations to integrate public health into the mainstream of undergraduate education at 2-year as well as 4-year colleges and universities. Richard Riegelman teaches undergraduate and graduate public health courses, which include Public Health 101 and Epidemiology 101.

**Brenda Kirkwood, MPH, DrPH**, works in academic administration and is clinical associate professor at the School of Public Health, University at Albany, State University of New York. Dr. Kirkwood has experience in higher education spanning public and private institutions on the associate, baccalaureate, and graduate levels, including development and teaching of undergraduate and graduate public health courses, development and management of public health academic programs, student advisement and mentorship, and contributing to public health education research. Prior to her career in higher education, Dr. Kirkwood held positions within the New York State Department of Health. She received a BS from Ithaca College, MPH from the University at Albany, State University of New York, and DrPH from The George Washington University.

Dr. Kirkwood has been actively involved in national efforts to expand public health education and strengthen the public health workforce. Her numerous publications and presentations have focused on the roles of, and opportunities for, public health education in 2-year and 4-year colleges and universities as well as at the graduate level.

