

*Series Editor: Richard Riegelman*



ESSENTIAL PUBLIC HEALTH

# Global Health 101

FOURTH EDITION

Richard Skolnik, MPA



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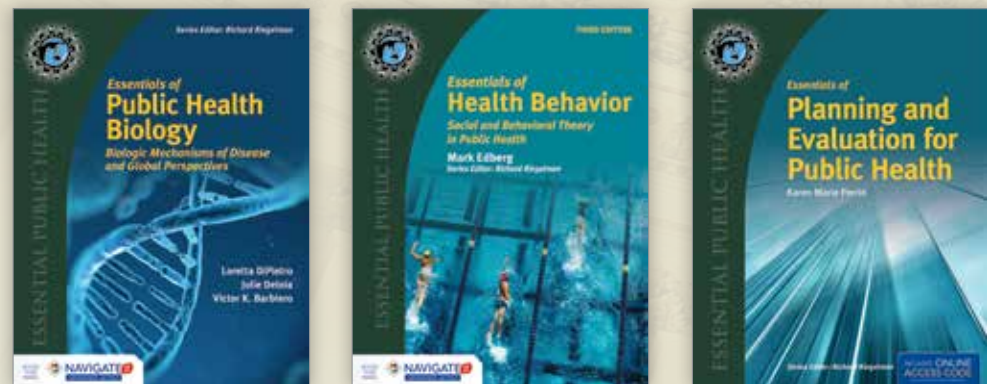
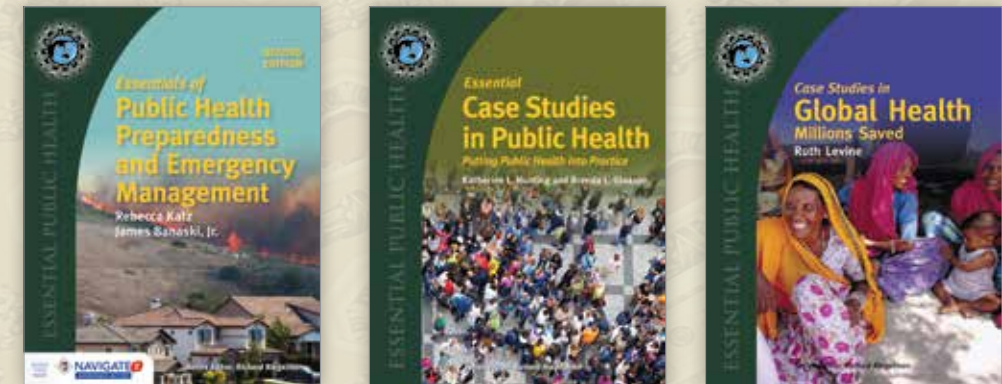
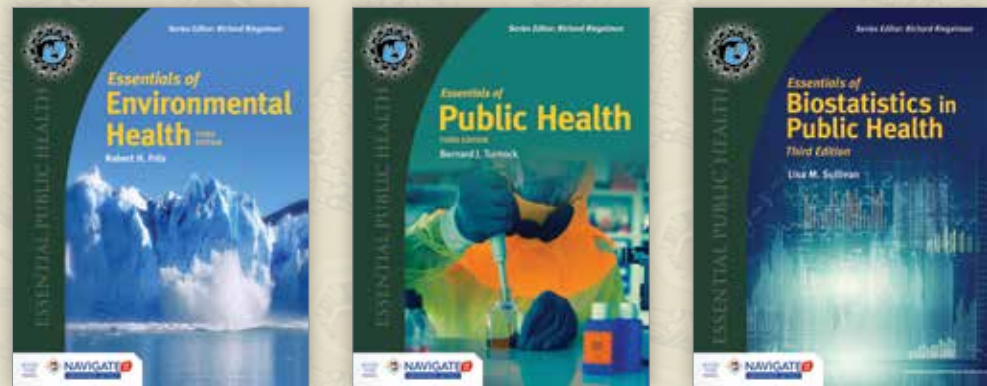
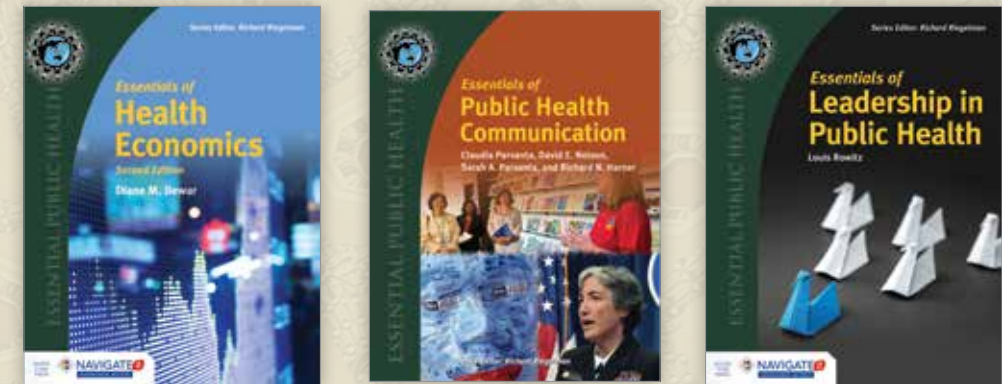
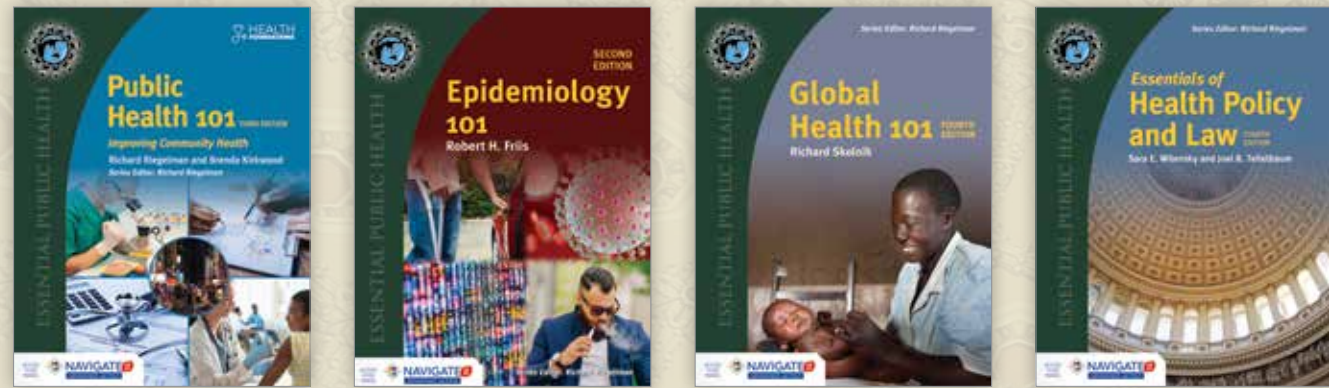
### Chapter 21 Profiles of Global Health Actors

To access the eBook, simply redeem the access code found at the front of this book at [www.jblearning.com](http://www.jblearning.com)

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## ABOUT THE EDITOR

**Richard K. 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 in Washington, DC. He has taken a lead role in developing the Educated Citizen and Public Health initiative which has brought together arts and sciences and public health education associations to implement the

Institute of Medicine of the National Academies' recommendation that "...all undergraduates should have access to education in public health." Dr. Riegelman also led the development of The George Washington's undergraduate major and minor and currently teaches "Public Health 101" and "Epidemiology 101" to undergraduates.



Courtesy of Mark Tuschman.

## Foreword

I am delighted to write this foreword for the new *Fourth Edition* of *Global Health 101*. I am following in the steps of illustrious predecessors, but unlike them am not a clinician, scientist, or epidemiologist but rather an economist and health systems researcher. In these introductory comments I will therefore focus on those aspects of global health I know best, namely the importance of introducing to students the economic aspects of global health and the economic dimensions of health systems.

Health economics, and health systems research, are relative newcomers amongst the disciplines and subject areas considered relevant to global health. Normally, the development of health economics is dated to the late 1960s, and health systems research is even more recent. But global health has a number of important economic dimensions. Health and national and global economies are intertwined, with influence in both directions. Health is both influenced by economic development, and an important determinant of economic development. At the micro level, households can be driven into poverty by the costs of ill health and of obtaining health care, but conversely good health can help households flourish. With respect to the health system, its size renders it of national and global economic significance – whether assessed as a share of national and global income spent on health care, or burden on household budgets, or proportion of the total workforce employed in the health system.

Economics also provides important tools for decision makers. Its analytical methods can guide priority setting, and help improve resource allocation. It provides insights on the critical question of how best to finance a health system, and understanding incentive structures in the health system can help determine how to improve its efficiency and equity.

*Global Health 101*, I am pleased to see, has ensured that these critical dimensions of global health are not overlooked. It has an important chapter on Health, Education, Poverty, and the Economy, which addresses the health – development link. It also introduces the use of cost-effectiveness analysis and cost-benefit analysis to help set health priorities. More broadly, across the text it draws on the exceptional range of evidence and recommendations included in the recently completed nine-volume study: *Disease Control Priorities, Third Edition (DCP3)* and its related *Lancet* articles, where cost-effectiveness analysis is extensively used to help derive recommendations on priority interventions and platforms.

New material has also been included in this edition on universal health coverage. Most of the rich world has benefited for decades from health systems that provide everyone with financial risk protection and access to health care. With the declaration of the United Nations General Assembly in 2012 on Universal Coverage, the importance of a health system that benefits everyone has risen on global and national policy agendas. This edition includes substantial additional information about the quest for universal health coverage, including greater treatment of universal health coverage as an organizing principle for health systems. It also includes the most recent evidence-based recommendations, drawn from *DCP3*, on an essential package of interventions for universal health coverage for low-income countries, and how low- and middle-income countries can move toward universal health coverage in cost-effective, feasible, sustainable, and equitable ways.

Richard's passion for teaching and learning illuminates the entire text. He ensures that the human dimension of global health is never forgotten, while still conveying the necessary technical instruction. I am sure that this updated edition will maintain the reputation of this textbook as an indispensable guide for both those who want a basic introduction to global health and those who want a sound foundation on which to build further, in-depth study.

**Dame Anne Jane Mills, DCMG, CBE, FRS, FMedSci**

*Professor Dame Anne Mills is Deputy Director & Provost at The London School of Hygiene & Tropical Medicine (LSHTM) and a worldwide authority on health economics, with a particular focus on how to create efficient and equitable health systems in low- and middle-income countries. Her specific areas of expertise include contracting-out health services, health insurance, the role of the private sector, and evaluation of malaria control interventions and delivery approaches.*

*Her ground-breaking work includes research on the economic impact of malaria and the most cost-effective ways to control the disease in Africa and Asia. She is heavily engaged in supporting capacity building in low- and middle-income countries in the areas of health economics and health systems research, and has trained many generations of masters and doctoral students.*

*Anne joined the LSHTM as a lecturer in 1979 after working at the Ministry of Health in Malawi as an economist, and has worked at the School ever since. She has held the position of President of the International Health Economics Association, was the Chair of the Board of the Alliance for Health Policy and Systems Research for its first 10 years, and was a founding Board member of Health Systems Global. She received a CBE for services to medicine in 2006, and is an elected Fellow of the US Academy of Medicine, the UK Academy of Medical Sciences and the Royal Society. In 2015, she was awarded a DCMG in recognition of her services to international health.*



Courtesy of Mark Tuschman.

## Editor's Preface

In the prologue to the previous editions, I wrote, “The issues of global health have finally arrived in the consciousness of the developed world through a unique union of efforts by former presidents, software pioneers, and rock stars. It is now time that students have a textbook . . . that systematically leads them through the issues of global health from basic principles, to the burden of disease, to examples of successful efforts to improve lives and livelihoods.” *Global Health 101* has fulfilled these expectations and more. It has become the classic textbook of global health and is now being used in a wide range of countries.

What can students and faculty expect from the *Fourth Edition* of *Global Health 101*? The *Fourth Edition* builds on the strengths of the *Third Edition*. Like the *Third Edition*, the *Fourth Edition* is written in a single voice, has a consistent format, and includes core chapters that are organized around a common set of questions about the burden of disease and what can be done to address it. The *Fourth Edition* also contains an extensive array of case studies, including a large number of new case studies.

In addition to updating and expanding many of the chapters, the *Fourth Edition* includes new emphasis on universal health coverage. The quest for universal health coverage includes treatment of universal health coverage as an organizing principle for health systems. It includes the most recent evidence-based recommendations on how low- and middle-income countries can move toward universal health coverage in cost-effective, doable, sustainable, and fairly distributed ways. Evidence-based recommendations on an essential package of services for low-income countries are also included.

The chapter on ethics and global health now includes information on best practices in ethical priority setting in global health. This chapter has been expand-

ed with the assistance of the leading global authority on ethical priority setting. The notion of ethical and fair priority setting is now embedded throughout the book.

Issues of quality of care in low- and middle-income countries have recently received increased attention. How they might be addressed is discussed more extensively than before in the health systems chapter of this edition. They are also embedded throughout the book and highlighted as a central issue in global health.

The *Fourth Edition* also includes, for the first time, photos, many from an award-winning photographer. The photos are used in a manner that illustrate key themes in the book. In addition, the photos have not only a caption but also study questions linked to the caption.

As students you'll enjoy and learn from the engaging videos, expand your knowledge using the web links, and test your understandings using the interactive questions and answers. The expanded chapters on careers in global health has additional profiles, including profiles of women and global health actors from outside of medicine and public health. These profiles bring to life opportunities in this growing and dynamic field.

For faculty, the book's website provides an abundance of additional resources to help broaden and deepen students' understanding of global health. Whether you are taking a global health course as part of general education, a major or minor in public health or global health, as part of your health professions education, or as part of your interest in international affairs, you will find the *Fourth Edition* an exhilarating experience that opens your mind and your heart to the world of global health.

**Richard Riegelman, MD, MPH, PhD**  
*Essential Public Health Series Editor*





Courtesy of Mark Tuschman.

# Author's Preface

## THE IMPORTANCE OF GLOBAL HEALTH

**W**hy should we care about the health of other people, especially that of people in other countries? For a number of critical reasons, the health of people everywhere must be an important concern for all of us.

First, diseases do not respect boundaries and globalization has increased the speed with which diseases can cross boundaries. Human immunodeficiency virus (HIV) has spread worldwide. A person with tuberculosis can infect 15 people a year. The West Nile Virus came from Egypt but occurs today in many countries. There is an important risk of a worldwide epidemic of influenza. Clearly, the health of each of us increasingly depends on the health of others.

Second, there is an ethical dimension to the health and well-being of other people. Many children in poor countries get sick and die needlessly of nutrition-related causes or from diseases that are preventable and curable. Many adults in poor countries die because they lack access to medicines that are typically available to people in rich countries. Is this just? Is this fair? Are we prepared to accept such deaths without collectively taking steps to prevent them?

Third, health is closely linked with economic and social development in an increasingly interdependent world. Children who suffer from undernutrition may not reach their full mental potential and may not enroll in or stay in school. Sick children from low- and middle-income countries are less likely than healthy children to become productive adults who can contribute to the economic standing of their family, community, or country. Adults who suffer from HIV/AIDS, tuberculosis, malaria, and other diseases lose income while they are sick and out of work, which contributes in many ways to keeping their families in an endless cycle of poverty. Clearly, improving health

enables individuals, their families, and their communities to realize more of their full social and economic potential than would otherwise be the case.

Finally, the health and well-being of people everywhere have important implications for global security and freedom. High rates of HIV/AIDS have contributed to destabilizing some countries, as more teachers and health workers died than were trained, and as insufficient numbers of rural workers grew and harvested crops. Outbreaks of other diseases, such as cholera, the plague, SARS (Severe Acute Respiratory Syndrome), and Ebola, for example, threaten people's ability to engage freely in economic pursuits and can have devastating economic and social consequences. An outbreak of cholera in 1991 cost Peru about \$1 billion, the plague in 1994 cost India about \$2 billion, and SARS in Asia in 2003 cost the economies of Asia a staggering \$18 billion in lost economic activity.

Indeed, these factors have increased interest in global health universally. The aim of this book, therefore, is to examine the most critical global health topics in a clear and engaging manner. The book will provide the reader with an overview of the importance of global health in the context of development, examine the most important global health issues and their economic and social consequences, and discuss some of the steps that are being taken to address these concerns. It will also provide numerous "success stories" as examples of effectively dealing with important global health problems.

This book is intended to provide an introduction to global health for all students. This includes students who have never studied public health before and who will not take additional public health courses in the future. However, it also includes those students, whether they have studied public health before or not, who

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may wish to pursue additional studies in public health later.

This approach of the book closely follows undergraduate global health courses that I taught at The George Washington University in Washington, DC and at Yale University in New Haven, Connecticut. The text seeks to “speak” to the reader in a manner one would find in an exciting and motivating classroom.

There are very few introductory materials on global health available that are comprehensive, clear, and written in a consistent format. Hopefully, this book will help to close that gap by providing a foundation for enhanced studies in public health, global health, and economic and social development.



Courtesy of Mark Tuschman.

## About the Text

### THE ORGANIZATION OF THIS TEXT

The book aims to assist students in gaining the understanding of global health needed to be able to address five questions from an evidence-based and interdisciplinary perspective:

**What is the problem?** This relates to what people get sick, disabled, and die from and how that varies, by age, sex, income and a number of other factors. It particularly concerns preventable illness and death.

**Who gets the problem?** This concerns the most affected population groups. For example, are they rich or poor? The educated or not educated? The majority or minority ethnic groups?

**Why do they get this problem?** What are the determinants of their morbidity and mortality? Are they, for example, social determinants, such as poverty and discrimination against their community? Or, are they more discrete risk factors, such as tobacco smoking?

**Why should we care about this problem?** What is the relationship between these concerns and the opportunity of people, communities, and nations to realize their full social and economic potential?

**What can be done to address the problem?** What does the best evidence say can be done to address the problem at least cost, as fast as possible, and in doable, sustainable, and fair ways?

This book is organized in several parts. **PART I** introduces the reader to the basic principles of global health, key measures of health, and the concepts of the health and the development link. Chapter 1 introduces readers to some key principles, themes, and goals of global health. Chapter 2 examines the determinants of health, how health is measured, and the health status of the world. Chapter 3 reviews the global burden of disease and risk factors. Chapter 4 looks at the links between health and development, touching upon the connections between health and education, equity, and poverty.

**PART II** reviews cross-cutting themes in global health. Chapter 5 examines human rights and ethical issues in global health, with special attention to ethical priority setting. Chapter 6 reviews the purpose and goals of health systems, how different countries have organized their health systems, and the quest for universal health coverage. The chapter also reviews the key challenges that health systems face, the costs and consequences of those challenges, and how some countries have addressed health system challenges. Culture plays an extremely important part in health and Chapter 7 examines the links between culture and health. This chapter reviews the importance of culture to health, how health is perceived in different groups, the manner in which different culture groups seek health care and engage in health practices, and how one can promote changes in health behavior.

**PART III** reviews the most important causes of illness, disability, and death, particularly in low- and middle-income countries. The chapters in this part of the book examine environmental issues, nutrition, women's health, child health, and the health of adolescents and young adults. The book then reviews communicable diseases, noncommunicable diseases, and unintentional injuries.

**PART IV** examines how cooperative action can address global health issues and how intersectoral action is needed to deal with the most important health and global health issues. Chapter 16 reviews the impact on health of conflicts, natural disasters, and other health emergencies. Chapter 17 examines how different actors in the global health field work both individually and cooperatively to address key global health problems. Chapter 18 reviews how science and technology have helped to improve public health and how further advances in science and technology could help to address some of the most important global health challenges

that remain. Chapter 19 examines intersectoral approaches to addressing global health priorities.

**PART V** focuses on careers in the global health field. Chapter 20 examines the types of careers in global health; the skills, knowledge, and experience needed to pursue these careers; and how you can get those skills, knowledge, and experience. The book ends with Chapter 21, which includes profiles of 22 actors in the global health field whose personal stories are meant to inspire you, as well as provide guidance about pursuing a career in global health if that is your interest.

Each of the chapters, other than those on working in global health and on profiles of global health actors, follows a similar outline. The chapters begin with vignettes that relate to the topic to be covered and which are intended to make the topic “real” for the reader. Some of these vignettes are not true in the literal sense. However, each of them are based on real events that occur regularly in the countries discussed in this book. Most chapters then explain key concepts, terms, and definitions. The chapters that deal with cross-cutting issues in the second and fourth parts of the book then examine the importance of the topic to enhancing global health, some key challenges in further improving global health, and what can be done to address those challenges.

The chapters that focus on health conditions look at the burden of disease related to these conditions; who is most affected by these issues; major risk factors for these burdens; and, the costs and consequences of these issues for individuals, communities, and the world. These chapters then examine the future challenges in each of these areas and what we have learned about how to deal with these health burdens in the most cost-effective, doable, sustainable, and fair ways.

All of the chapters, except Chapter 19 on intersectoral approaches, contain “case studies” that are meant to briefly introduce you to and illustrate important global health topics, actors, and organizations. There are more than 75 case studies overall. Some of these are explanatory, such as the case that examines the “One Health” approach. Some deal with well-known cases that have already proven to be models for global health efforts. Others, however, are based on experiences that show good promise, both for success and for providing lessons, but which have not yet proven themselves.

Each chapter concludes with a summary of the main messages in the chapter and a set of study questions that can assist the reader in reviewing the materials included in the chapter. Each chapter also contains endnotes with citations for the data that are used in the book. The book does not contain any additional lists of reference materials. Those wishing to explore topics in

greater depth will find ample suggestions for additional reading in the endnotes and on the website associated with the book.

The reader should note that the chapters are not in order of importance. Nutrition, for example, is fundamental to all health concerns. However, it only makes sense to cover nutrition in this book after establishing the context for studying global health and after covering some cross-cutting global health issues. In addition, you will note that there is no chapter called “globalization and health.” Rather, you will find that the relationships between globalization and health are integrated into all of the chapters. Some students may also wish to read Chapter 16 on global health policy, actors, and actions before they cover many of the other chapters. This may help them understand at an earlier stage how different actors have organized themselves to address key global health issues.

## THE PERSPECTIVE OF THE BOOK

The book will take a global perspective to all that it covers. Although the book includes many country case studies, topics will be examined from the perspective of the world as a whole. The book also pays particular attention to the links between poverty and health and the relationship between health, equity, and health disparities. Special attention will also be given to gender and ethnicity and their relation to health. Another theme that runs through the book is the connection between health and social and economic development.

The book follows the point of view that health is a human right. The book is written with the presumption that governments have an obligation to try to ensure that all of their people have access to an affordable package of healthcare services and that all people should be protected from the costs of ill health. The book is also based on the premise, however, that the development of a health system by any country is inextricably linked to the value system and the political structure of that country.

The book covers key global health topics, including those that affect high-income countries. However, the book pays particular attention to low- and middle-income countries and to poor people within them. The rationale for this is that improving health status indicators within and across countries can only be accomplished if the health of the poor and other disadvantaged groups is improved. The idea of social justice is at the core of public health.

## WHAT'S NEW TO THIS EDITION?

Almost every table and figure in *Global Health 101, Fourth Edition* has been updated. Whenever possible, data has been shown for 2016 or later. This edition takes account of the most recent major data sources on global health and the burden of disease, including the Global Burden of Disease and Risk Factors study (GBD). This edition of the book also takes account of the exceptional range of evidence and recommendations included in the recently completed nine-volume study: *Disease Control Priorities, Third Edition (DCP3)* and its related *Lancet* articles. This edition also uses the most up-to-date data and studies from the World Health Organization (WHO), UNAIDS, and the World Bank. Information provided by a range of *Lancet* Commissions is also used extensively. For the first time, much of the data on health status and the burden of disease is shown not only by region, but also by country income group.

### Sustainable Development Goals

Each core chapter has a table that relates the chapter topic to the Sustainable Development Goals.

### The Burden of Disease and Risk Factors

Understanding the burden of disease and related risk factors is a starting point for the book. All of the chapters on health issues are based on updated data on the burden of disease and related risk factors. Most of the data is for 2016 or later and comes from the GBD. This data is complemented by data from the World Bank, UNAIDS, and WHO that is also for 2016 or later. The burden of disease and risk factors is now discussed in its own chapter, rather than in combination with a discussion of the determinants of health and health status.

### Universal Health Coverage (UHC)

This edition includes substantial additional information about “the quest for universal health coverage.” This includes, for example, more treatment of universal health coverage as an organizing principle for health systems. It also includes the most recent evidence-based recommendations on what an essential package of UHC for low-income countries would include and how low- and middle-income countries can move toward UHC in cost-effective, doable, sustainable, and fair ways. The book also embeds many of the recommendations for addressing particular health conditions in the notion of high-quality primary health care and universal health coverage.

## Quality of Care

There are enormous issues in the quality of care in most countries, but especially in low- and middle-income countries. This was highlighted in a recent *Lancet* commission on quality. Issues of quality and how they might be addressed are discussed more extensively than before in the health systems chapter of this edition. They are also embedded throughout the book and highlighted as a central issue in global health.

## Ethics and Global Health

The chapter on ethics and global health has been expanded to include considerable additional information about best practices in “ethical priority setting in global health.” This chapter has been expanded with the assistance of the leading global authority on ethical priority setting. The notion of ethical and fair priority setting is now embedded throughout the book.

## Women's Health

The chapter on women's health has been expanded to include even more information about women's health broadly and what can be done to address women's health issues that go beyond reproductive and sexual health. This chapter also builds on the latest recommendations from *DCP3* and other up-to-date findings. Gender and equity issues run throughout the book.

## Children's Health

This edition of *Global Health 101* builds on the recent recommendations of *DCP3* and a range of other global studies. It also includes an update on the history and progress of the global program on immunization that is unique among the textbooks on global health.

## Adolescent Health

The chapter on adolescent health has been updated and expanded. Consistent with the growing global trend, the chapter also now includes 20-24 year old young adults, in addition to adolescents aged 10-19.

## Nutrition and Global Health

The nutrition chapter has been enhanced to include additional and updated information about undernutrition and overweight and obesity. The findings on overweight and obesity are associated with the most recent recommendations about the prevention and control of a range of noncommunicable diseases.

## Communicable Diseases

This edition of *Global Health 101* contains considerable updated information to its already very extensive chapter on communicable diseases. This includes enhancements on topics related to anti-microbial resistance and pandemic preparedness. Approaches to addressing TB and malaria, among other diseases, have changed substantially since the *Third Edition* and the new approaches are clearly outlined. The chapter on communicable diseases takes extensive account of the findings from *DCP3* and the latest recommendations of WHO and UNAIDS on measures to address HIV, TB, malaria, diarrhea, and selected neglected tropical diseases.

## Noncommunicable diseases (NCDs)

The world is now paying dramatically more attention to NCDs than ever before. *Global Health 101, Fourth Edition* includes a substantial amount of updated and additional information on NCDs, including the most recent recommendations about packages for addressing NCDs and the platforms from which to do so, as suggested by *DCP3*, WHO, and other global studies.

## Science and Technology for Global Health

The information on science and technology has been revised to focus on a range of public goods in global health and how science and technology can be used to make them available.

## Complex Humanitarian Emergencies

The chapter on complex emergencies has been updated and enhanced with comments on the coordination of emergencies.

## Intersectoral Approaches

A bonus chapter for the *Third Edition* on intersectoral approaches to enhancing global health is an integral part of this edition.

## Working in Global Health

Two chapters cover careers in global health, as in the *Third Edition*. The chapter on “Working in Global Health” has been updated. The chapter on Profiles of “Global Health Actors” includes several new profiles and more profiles than before of women who are involved in global health. It also includes more profiles than earlier of global health actors from outside the fields of medicine and public health. These two chapters are available in the Navigate 2 Advantage platform, accessible by redeeming the code found on the card at the front of the book.

## Case Studies

As in the *Third Edition*, the *Fourth Edition* of *Global Health 101* offers a number of case studies at the end of almost every chapter, to illustrate the main points of that chapter. The *Fourth Edition* includes over 75 cases. There are 47 case studies in the printed text found at the end of each chapter. An additional 30 case studies are available online through the Navigate 2 Advantage platform.

## Photos

The *Fourth Edition* of *Global Health 101* includes photos for the first time. To enhance teaching and learning, the photos are captioned in a unique way that raises questions for study and thinking. As an example, a picture might be labelled: “This photo shows a woman seeking a TB test in a clinic in Pakistan. What type of communications and other efforts might be needed to encourage such women to present for a test for a highly stigmatized disease in male-dominated countries like Pakistan?” Most of the photos come from an award-winning photographer, Mark Tuschman, and help to make “real” the topics covered in the book.

## Blog on Teaching Global Health

The author will continue to prepare a blog on teaching global health. The blog will contain information about resources for teaching global health. It will also include lessons that the author has learned from his teaching Global Health at the undergraduate level, to graduate students of public health, and to graduate students of business.

## PEDAGOGICAL FEATURES

### Learning Objectives

Learning Objectives at the start of each chapter give you a preview of what topics will be covered in the pages to follow.

**LEARNING OBJECTIVES**

By the end of this chapter, the reader will be able to do the following:

- Define the terms *health*, *public health*, and *global health*
- Discuss some examples of public health efforts
- Discuss some examples of global health activities
- Describe some of the guiding principles of public health work
- Describe the Sustainable Development Goals and their relation to global health
- Briefly discuss the global effort to eradicate smallpox

### Vignettes

By 2005, polio was on the verge of being eradicated. That year, however, rumors circulated in northern Nigeria that the polio vaccine was causing sterility. In response to these rumors, some community leaders discouraged people from immunizing their children. Within months, polio cases began to appear in the area. Shortly thereafter, polio cases spread from northern Nigeria to Sudan, Yemen, and Indonesia. The global campaign to eradicate polio had been dealt a major blow, stemming partly from rumors in one country about the alleged side effects of the vaccine.<sup>1</sup>

Getachew is a 20-year-old Ethiopian with HIV. He was recently placed on antiretroviral therapy for his infection. He is already gaining weight and feeling much

stronger than before. Getachew is one of about 1.2 million people in Ethiopia who are living with HIV.<sup>2</sup> He is also one of about 37 million people in the world who are HIV positive.<sup>3</sup> In Botswana, Lesotho, and Swaziland, more than 20 percent of all adults are HIV-positive.<sup>4</sup>

Laurie lives in Portsmouth, Virginia, in the United States. She is 50 years old and has always been healthy. Last weekend, she woke up with a headache, a high fever, and a very stiff neck. Laurie was so sick that she went to the emergency room of the local hospital. The physicians diagnosed Laurie as having meningitis, an inflammation of the membrane around the brain and spinal cord,<sup>5</sup> that was caused by West Nile virus. This virus originated in Egypt in the 1930s and is transmitted by mosquitoes. Today, the virus can be found in much of the world.<sup>6</sup>

### Vignettes

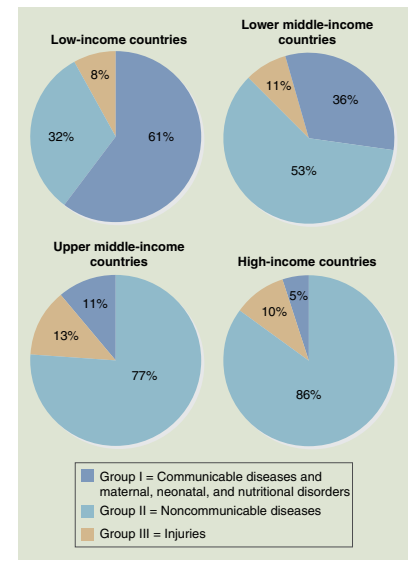
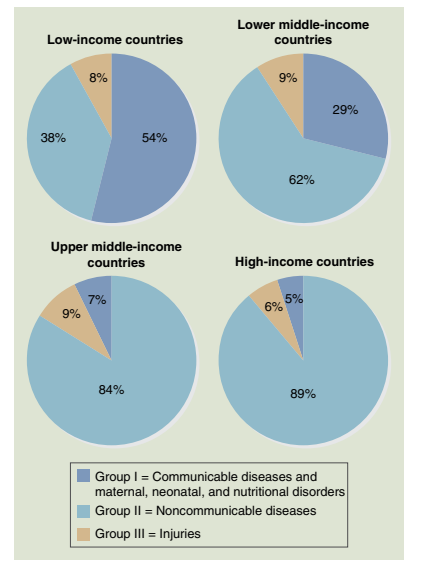
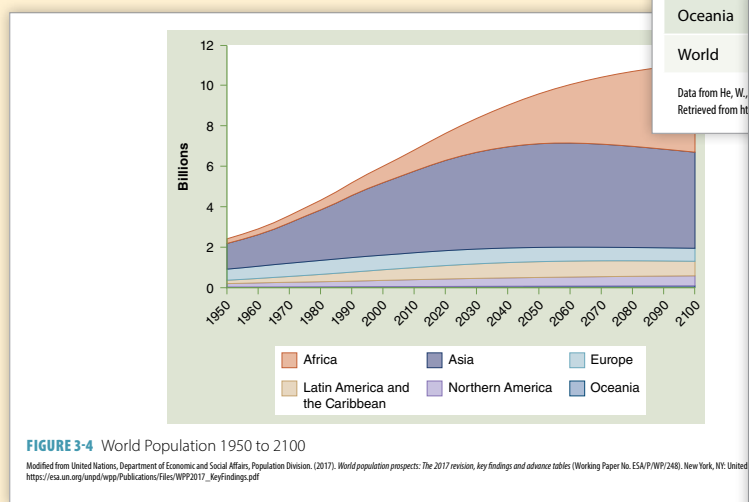
Based on events that occur regularly in countries across the globe, each chapter begins with several vignettes that bring to life the topic to be covered.

### Tables and Figures

Colorful, clear, easy-to-read tables and figures that engage you in visualizing and understanding key data.

**TABLE 3-10** Percentage of the Population Over 65 Years of Age, by WHO Regions and Globally, 2015, 2030, and 2050

	2015	2030	2050
Africa	3.5	4.4	6.7
Asia	7.9	12.1	18.8
Europe	17.4	22.8	27.8
Latin America and the Caribbean	7.6	11.8	18.6
Northern America	15.1	20.7	21.4
Oceania			
World			



Before starting our review of global health in greater detail, it will be helpful to define **health**, **public health**, and **global health**. Most of us think of “health” from our individual perspective as “not being sick.” The World Health Organization (WHO), however, set out a broader definition of health in 1948 that is still widely used:

### Key Terms

Throughout the text, key terms are highlighted in an orange, bold font and are defined in the glossary at the back of the book, for easy reference and review.

### Award-Winning Photographs

The *Fourth Edition* offers stunning new photos throughout the text, many from the award-winning photographer, Mark Tushman. Each with captions and discussion questions, these photos bring Global Health to life and illustrate key concepts and themes to provide a more meaningful learning experience.

**TABLE 3-5** Leading Causes of Death in Children Under 5 by World Bank Country Income Group, 2016

Rank	Low-Income	Lower Middle-Income	Upper Middle-Income	High-Income
1	Malaria	Lower respiratory infections	Neonatal preterm birth	Congenital defects
2	Lower respiratory infections	Neonatal preterm birth	Congenital defects	Neonatal preterm birth
3	Diarrheal diseases	Neonatal encephalopathy	Lower respiratory infections	Other neonatal disorders
4	Neonatal encephalopathy	Malaria	Neonatal encephalopathy	Neonatal encephalopathy
5	Neonatal preterm birth	Diarrheal diseases	Other neonatal disorders	Sudden infant death syndrome (SIDS)
6	Protein-energy malnutrition	Congenital defects	Neonatal sepsis	Neonatal sepsis
7	Neonatal sepsis	Other neonatal disorders	HIV/AIDS	Lower respiratory infections
8	Congenital defects	Neonatal sepsis	Diarrheal diseases	Road injuries
9	Other neonatal disorders	Meningitis	Road injuries	Endocrine, metabolic, blood, and immune disorders
10	Meningitis	Protein-energy malnutrition	Drowning	Mechanical forces

Data from Institute of Health Metrics and Evaluation (IHME), (n.d.). GBD Compare: Viz Hub. Retrieved from <https://vizhub.healthdata.org/gbd-compare/>

Nutritional issues are also prominent in the lowest-income countries, and road traffic injuries and drowning are important causes of death in the low- and



**PHOTO 3-2** This picture depicts a group of older Ethiopian children. What health conditions are likely to be the most



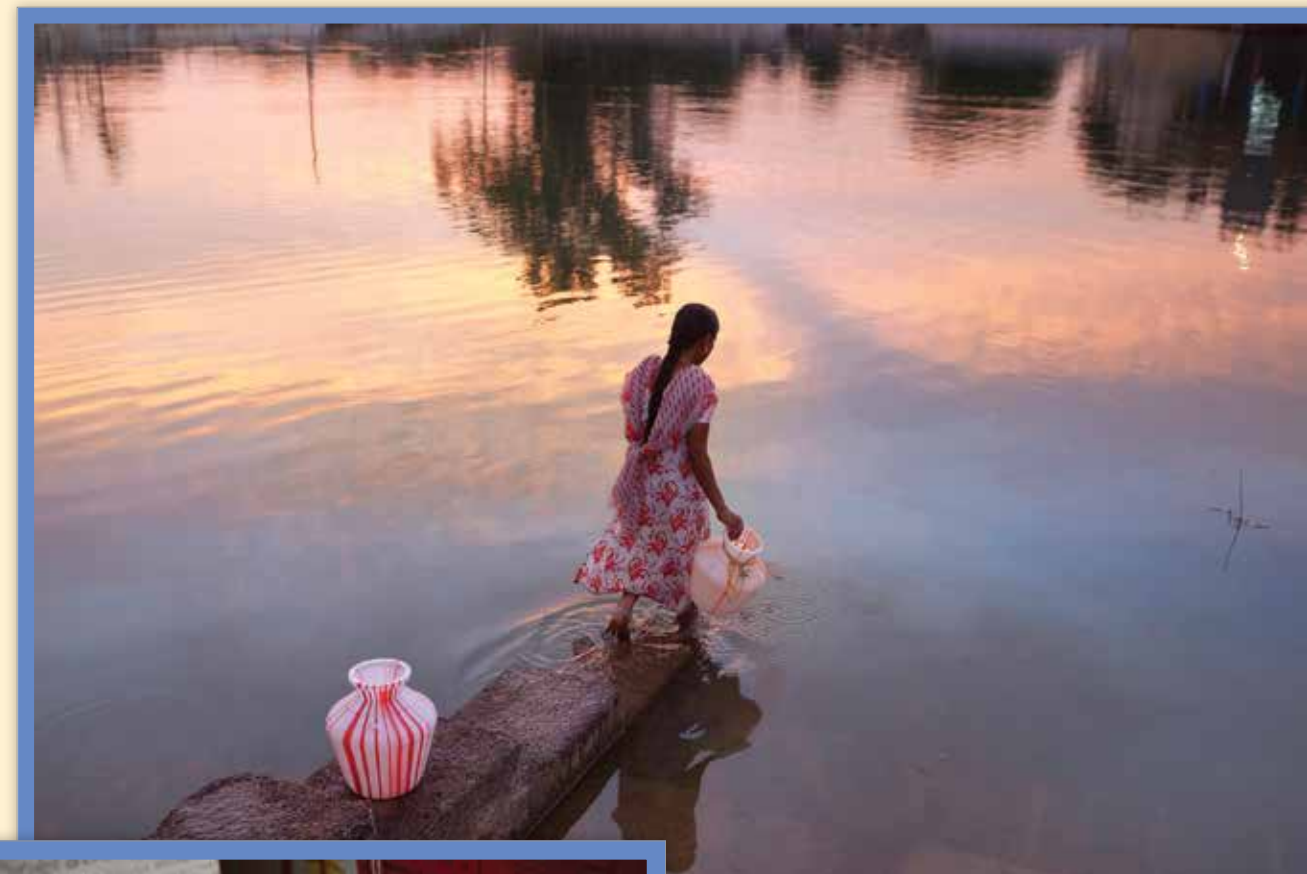
**PHOTO 3-2** This picture depicts a group of older Ethiopian children. What health conditions are likely to be the most important causes of death for children 8 to 10 years in Ethiopia? How would that vary between better places and lower-resource places within Ethiopia?

Courtesy of Mark Tushman.



**PHOTO 3-3** An indigenous woman in Guatemala is shown here being examined by healthcare workers in a local clinic. What are the most important burdens of disease for women like the one shown? What are the most important risk factors for those burdens? Why is it so important to consider the health of women broadly and not just focus on their reproductive health?

Courtesy of Mark Tushman.



Water is a major risk factor for ill health in many low- and lower middle-income countries. Collecting water for household use from an open source. What risks does this pose? What is likely to be the most cost-effective way of addressing these risks?



**PHOTO 13-2** People with active TB disease need to take four drugs daily for the first 2 months of treatment and two drugs daily for 4 months after that. This photo shows the pills a patient in India has to take daily for the first 2 months of treatment. This large pill burden is a disincentive to completing treatment. What measures have countries taken to try to ensure their TB patients take all of their medicines?

© Andrew Aitchison/Corbis Historical/Getty Images.



**PHOTO 3-1** A healthcare worker is pictured here, taking the blood pressure of a man in a health center in Mexico. Why is this so important? What risks does high blood pressure pose? What are some of the most important risk factors for having hypertension?

Courtesy of Mark Tushman.

## Case Studies

More than 75 case studies are offered in the *Fourth Edition of Global Health 101*. These case studies bring issues to life. Most follow a consistent format that walks you through the background, the intervention, the impact, and the cost and benefits.

Situated at the end of each chapter, the printed textbook offers 47 case studies that help you relate to the topics learned in the chapter. An additional 30 bonus case studies are offered on the Navigate 2 Advantage platform giving you further opportunity to understand the concepts learned through the text.

### ▶ Case Study: Smallpox Eradication—The Most Famous Success Story

It is fitting to end the main part of this introductory chapter with a summary of the most famous public health success story of all: the case of smallpox eradication. This effort was not only a great triumph of public health but also a great accomplishment for humanity. In addition, the history of smallpox eradication is well

### The Intervention

Although a vaccine against smallpox was created by Edward Jenner in 1798, eradication of smallpox became a practical goal only in the 1950s, when the vaccine could be mass produced and stored without refrigeration. A later breakthrough came in the form of the bifurcated needle, a marvel of simple technology that dramatically reduced costs by allowing needles to be reused endlessly after sterilization and by requiring a far smaller amount of vaccine per patient than had previously been the case. The needle also made vaccination easy, thereby reducing the time and effort required to train villagers in its use.

In 1959, WHO adopted a proposal to eradicate smallpox through compulsory vaccination, but the program languished until 1965, when the United States stepped in with technical and financial support. A Smallpox Eradication Unit was established at WHO, headed by Dr. D. A. Henderson of the Centers for Disease Control and Prevention (CDC) in the United States. As part of the smallpox eradication program, all WHO member countries were required to manage program funds effectively, report smallpox cases, encourage research on smallpox, and maintain flexibility in the implementation of the smallpox program to suit local conditions.

The Smallpox Eradication Unit proved to be a small but committed team, supplying vaccines and specimen kits to those countries that still had smallpox. Although wars and civil unrest caused disruptions in the program's progress, momentum was always regained with new methods and extra resources that focused on containing outbreaks by speedily seeking out new cases with motorized teams, isolating new cases, and vaccinating everyone in the vicinity of the

known to everyone who works in public health, and it provides many lessons that can be applied to other public health efforts.

### Background

In 1966, smallpox ravaged over 50 countries, affecting 10 million to 15 million people, of whom almost 2 million died each year.<sup>32</sup> At the time, smallpox killed as many as 30 percent of those infected. Those who survived could suffer from deep-pitted scars and blindness as a result of their illness.<sup>33</sup>

Smallpox was the first disease in history to have been eradicated. Smallpox had previously been eliminated in Latin America in 1971 and in Asia in 1975.<sup>34</sup>

### Costs and Benefits

The annual cost of the eradication campaign between 1967 and 1979 was \$23 million U.S. dollars (from here on, the dollar sign will refer to U.S. dollars unless otherwise stated). For the whole campaign, international donors provided \$98 million, and \$200 million came from the endemic countries.<sup>31</sup> The United States saves the total of all its contributions every 26 days because it no longer needs to spend money on vaccination or treatment, making smallpox eradication one of the best-value health accomplishments ever achieved.<sup>35</sup> Estimates for



**PHOTO 1-3** This photo shows the last person in the world to have suffered from the natural transmission of *variola major*, a 3-year-old girl in Bangladesh named Rahima Banu. This occurred in late 1975. In 1977, Ali Maow Maalin, a Somali, was the last person to have naturally acquired smallpox caused by *variola minor*. Why was smallpox chosen for eradication? What factors were behind the success of the eradication effort? Are there diseases today that are good candidates for eradication?

Stanley O. Foster M.D., M.P.H., World Health Organization/CDC, Centers for Disease Control and Prevention, (2016). History of smallpox. Retrieved from <https://www.cdc.gov/smallpox/history/history.html>

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## Study Questions

Each chapter ends with study questions so you can check your knowledge of the concepts presented while also applying critical and analytical thinking skills.

### Study Questions

- What are some examples of important progress in improving health worldwide over the last 50 years?
- What are some of the global health challenges that remain to be addressed?
- How might one define *health*, *public health*, and *global health*?
- What are some examples of public health activities?
- What are some examples of global health issues?
- What are the key differences between the approach of medicine and the approach of public health?
- What are some of the most important challenges to health globally?
- Why should everyone be concerned about global health issues?
- What are the Sustainable Development Goals and how do they relate to health and global health?
- What were some of the keys to the success of smallpox? What lessons does the eradication program suggest for other health programs?

## References

Interested in learning more? Use the references listed at the end of each chapter to go online (or to the library), to read the information from its original source.

## Case Studies Included in the Printed Textbook

- Smallpox Eradication—The Most Famous Success Story (Chapter 1)
- The Million Deaths Study (Chapter 3)
- Health Equity and Lesbian, Gay, Bisexual and Transgender People (Chapter 4)
- The Challenge of Guinea Worm in Asia and Sub-Saharan Africa (Chapter 4)
- Ethical Priority Setting in Norway (Chapter 5)
- Pharmaceuticals (Chapter 6)
- Essential Surgery (Chapter 6)
- Improving Health Outcomes in Rwanda through Pay-for-Performance Schemes (Chapter 6)
- Health for All in Thailand through the Universal Coverage Scheme (Chapter 6)
- Breastfeeding in Burundi (Chapter 7)
- Polio Vaccination in India (Chapter 7)
- Ebola and Culture (Chapter 7)
- Handwashing with Soap in Senegal (Chapter 8)
- Total Sanitation and Sanitation Marketing: East Java, Indonesia (Chapter 8)
- Concrete Floors for Child Health (Chapter 8)
- Climate Change and Health (Chapter 8)
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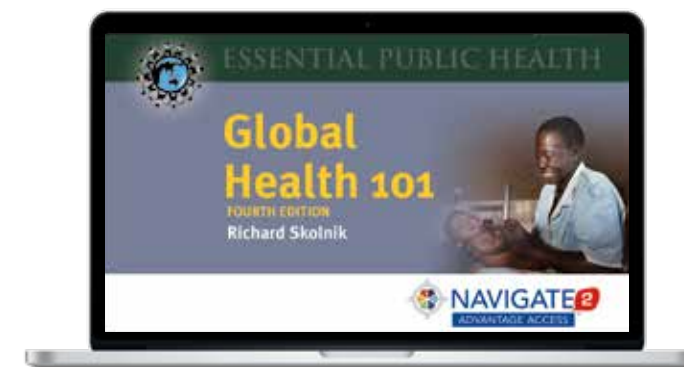
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Courtesy of Mark Tuschman.

## About the Author

**R**ichard Skolnik has worked for more than 40 years in education, health, and development and is one of the world's most experienced teachers of global health.

Richard worked at the World Bank from 1976 to 2001, last serving as the Director for Health and Education for the South Asia region. His health work at the World Bank focused on health systems development, family planning and reproductive health, child health, the control of communicable diseases, and nutrition in low-income countries. He was also deeply engaged with tuberculosis, HIV, leprosy, and cataract blindness control projects in India.

Richard has also participated extensively in policy-making and program development at the international level. Richard coordinated the World Bank's work on TB for 5 years, was deeply involved in the establishment of STOP TB, represented the World Bank to the Global Polio Eradication Initiative, served on a number of WHO working groups on TB, and served three rounds on the Technical Review Panel of the Global Fund. Richard led two evaluations of the International AIDS Vaccine Initiative and also led an evaluation of the Global Alliance to Eliminate Leprosy. Richard also worked with the Results for Development Institute on the long-run financing of HIV programs in Cambodia, India, and Nigeria.

In addition, Richard has served on advisory groups and faculty for the Harvard Humanitarian Initiative, the development of a women's health program at Harvard University, and the Global Health Leadership Institute at Yale University. He was also a member of an expert panel that reviewed the Framework Program of the Fogarty Center of the United States National Institutes of Health. He also served 3 years on the advisory

board for the College of Health and Human Services at George Mason University. He recently served on the editorial advisory committee for *Disease Control Priorities in Developing Countries, Third Edition*. Richard has given scores of guest lectures and in 2011 was the commencement speaker for the College of Health and Human Services at George Mason University.

From 2001 to 2004 and from 2009 until 2011, Richard was a lecturer in the Department of Global Health at The George Washington University (GWU), where he taught four courses per year of an introductory global health course for undergraduates. At GWU, Richard also supervised final research projects for master of public health (MPH) students. Richard was an Undergraduate Public Health Teacher of the Year at The George Washington University and was asked in 2009 to deliver a lecture in the GWU "Last Lecture" series. He also served as the Director of the Center for Global Health at George Washington.

In 2005 and 2006, Richard was the Executive Director of the Harvard School of Public Health PEP-FAR program for AIDS treatment in Botswana, Nigeria, and Tanzania. In 2007 and 2008, he was the Vice President for International Programs at the Population Reference Bureau (PRB).

From 2012 to 2016, Richard was a Lecturer in the Health Policy and Management Department at the Yale School of Public Health and from 2013 until 2016 he was also a Lecturer in the Practice of Management at the Yale School of Management. At Yale, Richard taught an introductory global health course twice a year to undergraduate students. He also taught a once-a-year upper level undergraduate course called "Case Studies in Global Health." Richard also taught an introduction to global health for graduate MPH

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students and a global health course to students in the healthcare stream of the Executive MBA program of the Yale School of Management. Richard also developed for Yale a massive open online course, *Essentials of Global Health*, which is on Coursera.

Richard attended high school in Dayton, Ohio. He received a bachelor of arts degree from Yale University and a master of public affairs degree from the Woodrow Wilson School of Princeton University. At Yale, he participated in the Experimental Five-Year BA Program, under which he spent 1 year teaching high school biology in Laoag City, Philippines, living with the same family with whom he had lived as

an exchange student in 1966. Upon graduation from Yale, Richard was selected for a fellowship by the Yale–China Association and spent 2 years teaching at The Chinese University of Hong Kong. In the summer between his 2 years at the Woodrow Wilson School, Richard was a research fellow at the Institute of Southeast Asian Studies in Singapore, where he authored a monograph on education and training in Singapore. Richard has worked on health issues in Africa, Latin America and the Caribbean, the Middle East and North Africa, South Asia, and South-East Asia. He has also studied and learned to varying degrees Cantonese, French, Ilocano, Mandarin, Spanish, and Tagalog.



## Abbreviations

<b>Term</b>	<b>Definition</b>		
ACT	artemisinin combination therapy	DANIDA	Danish International Development Agency
ADB	Asian Development Bank	<i>DCP3</i>	<i>Disease Control Priorities, Third Edition</i>
ADL	adenolymphangitis	DEC	diethylcarbamazine citrate
AfDB	African Development Bank	DFID	Department for International Development of the United Kingdom
AIDS	acquired immune deficiency syndrome	DHS	Demographic and Health Survey
AMC	Advance Market Commitments	DRC	Democratic Republic of the Congo
APOC	African Programme for Onchocerciasis Control	DTP	diphtheria, tetanus, and pertussis
ARI	acute respiratory infection	ECCE	extracapsular cataract extraction
ART	antiretroviral therapy	EPI	Expanded Program on Immunization
AZT	zidovudine	EU	European Union
BCG	Bacillus Calmette-Guérin (the tuberculosis vaccine)	EVD	Ebola virus disease
BMI	body mass index	FAO	Food and Agriculture Organization of the United Nations
BOD	burden of disease	FDA	Food and Drug Administration (United States)
CCT	conditional cash transfer	FGM	female genital mutilation
CDC	The U.S. Centers for Disease Control and Prevention	FSU	Former Soviet Union
CFR	case fatality ratio	Gavi	The Vaccine Alliance
CHC	community health center	GBD	Global Burden of Disease Study
CHE	complex humanitarian emergency	GDM	gestational diabetes mellitus
CLTS	community-led total sanitation	GDP	gross domestic product
CMR	crude mortality rate	GIS	geographic information system
COPD	chronic obstructive pulmonary disease	GNI	gross national income
CRC	Convention on the Rights of the Child	GNP	gross national product
CVD	cardiovascular disease	GOARN	Global Outbreak and Response Network
DALY	disability-adjusted life year	GOBI	growth monitoring, oral rehydration, breastfeeding, and immunization

**xxxvi Abbreviations**

GPEI	Global Polio Eradication Initiative
HALE	health-adjusted life expectancy
HDL	high-density lipoprotein
Hib	Haemophilus influenzae type b
HIV	human immunodeficiency virus
HPV	human papillomavirus
HSV	herpes simplex virus
IASC	Interagency Standing Committee
IBRD	International Bank for Reconstruction and Development (World Bank)
ICCE	intracapsular cataract extraction
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Cultural, and Social Rights
IDA	International Development Association (the “soft” lending window of the World Bank)
IDB	Inter-American Development Bank
IDD	iodine deficiency disorder
IDF	International Diabetes Federation
IDP	internally displaced person
IEC	information, education, and communication
IFFIm	International Financing Facility for Immunisation
IHD	ischemic heart disease
IHME	Institute of Health Metrics and Evaluation
IHR	International Health Regulations
ILO	International Labor Organization
IMCI	integrated management of childhood illness
IMF	International Monetary Fund
IMR	infant mortality rate
INCOSUR	Southern Cone Initiative to Eliminate Chagas
IPT	intermittent preventive treatment
IPV	injectable polio vaccine
IQ	intelligence quotient
IRB	institutional review board

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ITI	International Trachoma Initiative
ITN	insecticide-treated bednet
IUD	intrauterine device
LDL	low-density lipoprotein
LGBT	Lesbian, gay, bisexual, and transgender
LMICs	low- and middle-income countries
MCH	maternal and child health
MDG	Millennium Development Goal
MDR	multidrug resistant
MERS	Middle-East respiratory syndrome
MI	The Micronutrient Initiative (now Nutrition International)
MMR	maternal mortality rate
MSF	Doctors Without Borders (Médecins Sans Frontières in French)
NAACP	National Association for the Advancement of Colored People
NCD	noncommunicable disease
NGO	nongovernmental organization
NHS	National Health Service (United Kingdom)
NID	National Immunization Day
NIH	National Institutes of Health (United States)
NNMR	neonatal mortality rate
NTD	neglected tropical disease
OCHA	Office for the Coordination of Humanitarian Affairs
OCP	Onchocerciasis Control Program
OPV	oral polio vaccine
ORS	oral rehydration solution
ORT	oral rehydration therapy
PAHO	Pan American Health Organization
PDP	product development partnership
PEPFAR	President’s Emergency Plan for AIDS Relief
PHC	primary health care
PHS	Public Health Services (United States)
PMTCT	prevention of mother-to-child transmission
PPP	public–private partnership

**Abbreviations xxxvii**

PTSD	post-traumatic stress disorder
QALY	quality-adjusted life year
RBM	Roll Back Malaria
RDT	rapid diagnostic kit
REC	Research Ethics Committee
ROC	Republic of the Congo
RR	rifampicin resistant
RTI	road traffic injury
SAFE	surgery, antibiotics, face washing, environmental change
SAM	severe acute malnutrition
SARS	severe acute respiratory infection
SDG	sustainable development goal
SIDA	Swedish International Development Cooperation Agency
SSB	sugar-sweetened beverage
STI	sexually transmitted infection
SUS	Sistema Único de Saúde (Unified Health System, Brazil)
TB	tuberculosis
TBA	traditional birth attendant
TDR	Special Program for Research and Training in Tropical Diseases (WHO)
TFR	total fertility rate
TRIPS	Agreement on Trade-R

