



Introduction

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The three of us are privileged to be faculty at schools that provide graduate education to students who plan to enter into or have already begun careers in public health. Many of them wish to learn about the public health problems and challenges facing low- and middle-income countries, often referred to as developing countries. Most are committed to teaching, to public health practice or administration, or to undertaking research in these countries or in international settings. This textbook is written for these students and those who teach and mentor them. In this introduction, we define international public health, provide a brief history of the field, and summarize the many challenges currently before it. We then explain how we put this textbook together and how we think it can best be used.

What Is International Public Health?

The term *public health* evokes different ideas and images. Is it a profession, a discipline, or a system? Is it concerned primarily with the health care of the poor? Does it mean working in an urban clinic, or providing clean water and sanitation? C.-E. A. Winslow (1920), often regarded as the founder of modern public health in the United States, defined public health as

the science and art of preventing disease, prolonging life and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of communicable infections, the education of the individual in personal hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every

individual a standard of living adequate for the maintenance of health; organizing these benefits in such a fashion as to enable every citizen to realize his birthright of health and longevity.

The unique features of public health (Exhibit I-1) were aptly defined in 1994 by an Essential Public Health Services Working Group of the Core Public Health Functions Steering Committee of the United States Public Health Service and further elaborated by Turnock (2004). Its most distinguishing feature is its focus on prevention. This can mean prevention of illness, deaths, hospital admissions, days lost from school or work, or consumption of unnecessary human or fiscal resources. Unfortunately, prevention efforts are often difficult; their successes are often not visible, and most programs lack sufficient priority and resources to achieve their maximum impact. In all countries, much greater attention and budgets are directed toward the provision of medical care, including the purchase of drugs.

One of the most outstanding characteristics of public health is its grounding in a multitude of sciences. These include the quantitative sciences of epidemiology and biostatistics; the biological sciences concerned with humans, microorganisms, and vectors; and the social and behavioral sciences, including economics, psychology, anthropology, and sociology. The latter have received more attention in recent years, as greater importance has been placed on defining and directing prevention efforts toward the economic, social, and behavioral determinants of illness and not only at individuals deemed at high risk for a particular public health problem (Ashton & Seymour, 1988). A similar growth in those trained in the managerial sciences in public health stems from the current debates

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Exhibit I-1	Selected Unique Features of Public Health
	<ul style="list-style-type: none"> • Use of prevention as a prime intervention strategy • Grounded in a broad array of sciences • Basis in social justice philosophy • Link with government and public policy

on the organization and financing of health services in countries rich and poor. With the human genome now fully cloned, public health efforts in the future will most likely be able to apply the recent advances in genetics toward prevention of illness and disease, while being sure to protect the confidentiality rights of individuals. It is evident that the multidisciplinary and interdisciplinary nature of public health requires partnerships among those with diverse experiences and perspectives.

Social justice is the main pillar of public health. Its basic tenet is that the knowledge obtained about how to ensure a healthy population must be extended equally to all groups in any society, even when the burden of disease and ill health within that society is distributed unequally. Often this fair distribution of benefits is impeded by differences in gender, social class, ethnicity, and race. A critical challenge for public health is overcoming those barriers that prevent the application of the broad array of available prevention approaches and tools.

Although many public health activities are carried out by nongovernmental organizations (NGOs) and the private sector, governments play a crucial role in at least two ways. First, they design and implement public policies that bear on social and environmental conditions, such as employment, housing, and pollution control. Second, they provide specific programs and services, usually to populations with the greatest disadvantages, in an effort to ensure equity in access and in health status. Because of its link to government and its social justice underpinnings, public health is a profession that often stimulates political debate and controversy: witness the difficulties in almost all countries in obtaining government support for needle exchange programs, despite their proven efficacy in reducing the transmission of the human immunodeficiency virus (HIV) (Hurley, Jolley, & Kaldor, 1997).

One is often asked to explain the differences between public health and medicine (Exhibit I-2). These have been nicely summarized by Feinberg (1994). Those working in public health are concerned with the health of populations, have a public service ethic tem-

Exhibit I-2	Some Differences Between Public Health and Medicine
	<p>Public Health</p> <ul style="list-style-type: none"> • Primary focus on population • Public service ethic, tempered by concerns for the individual • Emphasis on health promotion and disease prevention • Reliance on many sectors <p>Medicine</p> <ul style="list-style-type: none"> • Primary focus on individual • Personal service ethic, conditioned by awareness of social responsibilities • Emphasis on diagnosis and treatment; care for the whole patient • Reliance on health care system

pered by concerns for the individual, and place their emphasis on health promotion and disease prevention. Those working in medicine are more interested in the well-being of individuals, have a personal service ethic conditioned by awareness of social responsibilities, and focus their efforts on diagnosis of disease and treatment of patients. Those working in public health require knowledge and input from many sectors—health, environment, social welfare, and education, to name but a few—whereas those practicing medicine rely primarily on the services of the health care system. Of course, these differences are not always so sharp, and efforts are under way around the world to enhance collaboration between public health and medicine. Nevertheless, they help to illustrate what is meant by public health.

We define *international public health* as the application of the principles of public health to health problems and challenges that affect low and middle income countries and to the complex array of global and local forces that affect them. Today, these global forces include urbanization, migration, and an explosion in information technology and expanding global markets. Most of the attention in international public health is focused on low- and middle-income countries, as they have the greatest mortality and morbidity and inadequate health systems to meet the needs of their most vulnerable populations. Improving the health status of these populations requires an understanding of their social, cultural, and economic characteristics. In the study of international public health, much can be learned by comparing the approaches used by different countries in addressing their main public health problems.

What are some of the problems and issues that today's student of international public health needs to understand?

- The main causes of mortality and morbidity in the world today and also in the future, in view of the demographic transition facing many countries
- The cultural diversity of population groups within countries and regions, and their values, belief systems, and responses to illness and death
- The causes and consequences of human population growth and the beneficial effects for women and children of reproductive health programs
- The complex relationship between nutritional status and disease patterns, including the importance of specific micronutrient deficiencies
- The main infectious agents and vectors responsible for communicable diseases, the increasing rates of noncommunicable (or chronic) diseases, and the social, economic, behavioral, and environmental factors responsible for these diseases
- The increasing burden of mortality and morbidity attributable to nonintentional and intentional injuries
- The various approaches to the design, financing, organization, and management of preventive and curative services in the public and private sectors in countries with diverse economies and resources
- The appropriate responses to complex humanitarian emergencies, especially those that involve large displacements of populations within a country and between neighboring countries
- The importance of health for the economic development of a nation and the productivity of its population, and the reciprocal impact of development, as reflected by such factors as educational levels and economic growth, on health status
- The roles of national, regional, international, and intergovernmental development agencies, as well as nongovernmental and private voluntary agencies in delivery of preventive and care services

This textbook contains chapters dedicated to these and related topics. More detail will be provided

about these later, after first offering a brief history of international public health and a summary of the main challenges facing those seeking careers in this field today.

A Brief History of International Public Health

The history of international public health can be viewed as a history of how populations experience health and illness; how social, economic, and political systems create the possibilities for healthy or unhealthy lives; how societies create the preconditions for the production and transmission of disease; and how people, both as individuals and as social groups, attempt to promote their own health or avoid illness (Rosen, 1993). A number of authors have documented this history (Arnold, 1988; Basch, 1999; Leff & Leff, 1957; Rosen, 1993; Winslow & Hallock, 1949). A brief history is presented here primarily to provide a perspective for the challenges that face us today (Exhibit I-3).

It is difficult to select a date for the origins of the field of public health. Some would begin with Hippocrates, whose book *Airs, Waters and Places*, published around 400 BC, was the first systematic effort to present the causal relations between environmental factors and disease and to offer a theoretical basis for an understanding of endemic and epidemic diseases. Others would cite the introduction of public sanitation and an organized water supply system by the Romans in the first century. Many would select the bubonic plague (or Black Death) epidemic of the fourteenth century, which began in Central Asia, was carried on ships to Constantinople, Genoa, and other European ports, and then spread to the interior, killing 25 million persons in Europe alone. Believing that plague was introduced by ships, port cities such as Venice and Marseilles adopted a 40-day quarantine period for entering vessels and established a cordon sanitaire, an approach that was to be used to control other infectious diseases in subsequent centuries.

The Middle Ages was also the period when many cities in Europe, particularly through guilds, took an active part in founding hospitals and other institutions to provide medical care and social assistance. It was also a time when many European countries expanded their horizons abroad, exploring and colonizing new lands. They brought some diseases with them (e.g., influenza, measles, and smallpox), and those who settled were forced to confront diseases that had never been seen in Europe (such as syphilis, dysentery,

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Exhibit I-3	A Summarized History of International Public Health
400 BC	Hippocrates presents causal relation between environment and disease
1st century AD	Romans introduce public sanitation and organized water supply system.
14th century	Black Death epidemic leads to quarantine and cordon sanitaire
Middle Ages	Colonial expansion spreads infectious diseases around the world
1750–1850	Industrial Revolution results in extensive health and social improvements in cities in Europe and the United States
1850–1910	Great expansion of knowledge about the causes and transmission of communicable diseases
1910–1945	Reductions in child mortality; establishment of schools of public health and international foundations and intergovernmental agencies interested in public health
1945–1990	Creation of World Bank and other UN agencies; WHO eradicates smallpox; HIV/AIDS epidemic begins; Alma Ata Conference gives emphasis to primary health care; UNICEF leads efforts for universal childhood immunization; greater attention to chronic diseases
1990–2005	Priority given to health sector reform, equity, health and development, impact of and responses to globalization, cost-effectiveness, public-private partnerships in health, and use of information and communications technologies

malaria, and sleeping sickness). European explorers also brought new pathogens from one part of Africa to another and from one area of the globe to another (e.g., from Africa to North America through the slave trade). On long voyages, however, the greatest enemy of the sailor was often scurvy, until 1875, when the British government issued its famous order that all men-of-war should carry a supply of lemon juice.

The Age of Enlightenment (1750–1830) was a pivotal period in the evolution of international public health. It was a time of social action in relation to health, as reflected by the new interest taken in the health problems of specific population groups. During this period, rapid advances in technology led to the development of factories. In England and elsewhere, this was paralleled by expansion of the coal mines. The Industrial Revolution had arrived. As a result, the populations of the cities of England and other industrialized nations grew enormously, creating many unsanitary conditions that caused outbreaks of cholera and other epidemic diseases that resulted in high rates of child mortality. Near the end of this period, significant efforts were made to address these problems. Improvements were made in urban water supplies and sewerage, municipal hospitals arose throughout cities in Europe and the East Coast of the United States, laws were enacted limiting the work of children, and data on deaths and births began to be systematically collected in many places.

However, as industrialization continued, more efforts to protect the health of the public were needed. These occurred first in England, often regarded as

the first modern industrial country, through the efforts of Edwin Chadwick. Beginning in 1832, he headed up the royal Poor Law Commission, which undertook an extensive survey of health and sanitation conditions throughout the country. The work of this commission eventually led in 1848 to the Public Health Act, which created a General Board of Health that was empowered to appoint local boards of health and medical officers of health to deal effectively with public health problems. The impact of these developments was felt throughout Europe and especially in the United States, where it stimulated creation of health departments in many cities and states.

Cholera, which in the first half of the nineteenth century spread in waves from South Asia to the Middle East and then to Europe and the United States, did the most to stimulate the formal internationalization of public health. The policy of establishing a cordon sanitaire, applied by many European nations in an effort to control the disease, had become a major influence on trade, necessitating an international agreement. In 1851 the First International Sanitary Conference was convened in Paris to discuss the role of quarantine in the control of cholera as well as plague and yellow fever, which were causing epidemics throughout Europe. Although no real agreement was reached, the conference laid the foundations for international cooperation in health.

The main development in international public health in the latter part of the nineteenth century was the enormous growth of knowledge in the area of microbiology, as exemplified by Louis Pasteur's proof

of the germ theory of disease, Robert Koch's discovery of the tubercle bacillus, and Walter Reed's demonstration of the role of the mosquito in transmitting yellow fever. Between 1880 and 1910, the etiological cause and means of transmission of most communicable diseases were discovered in laboratories in North America and Europe. This was paralleled by related discoveries in the sciences of physiology, metabolism, endocrinology, and nutrition. Dramatic decreases soon were seen in child and adult mortality through improvements in social and economic conditions, discovery of vaccines, and implementation of programs in health education. The way was now clear for the development of public health administration based on a scientific understanding of the elements involved in the transmission of communicable diseases.

The first two decades of the twentieth century witnessed the establishment of three formal intergovernmental public health bodies: the International Sanitary Bureau to serve nations in the Western hemisphere (in 1904); L'office Internationale d'Hygiene Public in Paris, concerned with prevention and control of the main quarantinable diseases (in 1909); and the League of Nations Health Office (LNHO) in Geneva, which provided assistance to member states on technical matters related to health (in 1920). In 1926 the LNHO started publication of the *Weekly Epidemiological Record*, which has continued as the weekly publication of the World Health Organization (WHO). It also established many scientific and technical commissions, issued reports on the status of many infectious and chronic diseases, and sent its staff around the world to assist national governments in dealing with their health problems.

In North America and countries in Europe, the explosion of scientific knowledge in the latter part of the nineteenth century and the belief that social problems could be solved stimulated medical schools, such as Johns Hopkins University, to establish schools of public health. In France, public subscriptions helped to fund the Institut Pasteur (in honor of Louis Pasteur) in Paris, which subsequently developed a network of institutes throughout the francophone world that produced sera and vaccines and conducted research on a wide variety of tropical diseases. Another significant development during this period was the founding of the Rockefeller Foundation (in 1909) and its International Health Commission (in 1913). During its 38 years of operation, the commission cooperated with many governments in campaigns against endemic diseases such as hookworm, malaria, and yellow fever. The foundation also provided essential financial support to help establish

medical schools in China, Thailand, and elsewhere, and later supported international health programs in a number of American and European schools of medicine and public health. All these developments were paralleled by the development and strengthening of competencies in public health among the militaries of the United States and the countries of Europe, stimulated in great part by the buildup to and realities of World War I. Following the war, there was increasing recognition that much ill health in the colonial world was not easily solvable with medical interventions and was intractably bound up with problems of malnutrition and poverty.

Most historians would date the beginning of our current era of international public health to the end of World War II. The need to reconstruct the economies of America and the countries of Western Europe, and the rapid emergence of newly independent countries in Africa and Asia, led to the establishment of many new intergovernmental organizations. The United Nations Monetary and Financial Conference, held in Bretton Woods, New Hampshire, and attended by representatives from 43 countries, led to the establishment of the International Bank for Reconstruction and Development (or World Bank) and the International Monetary Fund. The former initially lent money to countries only at prevailing market interest rates, but beginning in 1960 also provided loans to poorer countries at much lower interest rates and with far better terms through its International Development Association. It was not until the early 1980s that the World Bank began to accelerate greatly its provisions of loans to countries for programs in health and education, but by the end of the decade these loans were the greatest source of foreign assistance to low- and middle-income countries (Ruger, 2005). In the decade after World War II, many other United Nations organizations (e.g., the United Nations Children's Fund, or UNICEF) and specialized agencies (such as WHO) were formed to assist countries in strengthening their health and other social sectors. In addition, most of the wealthier industrialized countries established agencies or bureaus that funded bilateral projects in specific low- and middle-income countries. For the former major colonial powers, such assistance was most often provided to their former colonies.

Many of the international public health efforts in the 1960s and 1970s were dedicated to the control of specific diseases. A global effort to control malaria was hampered by a number of operational and technical difficulties, including the vector's increasing resistance to insecticides and the parasite's resistance to available antimalarial drugs. However, the campaign to eradicate smallpox, led by WHO,

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successfully eliminated the disease in 1981 and stimulated the establishment of the Expanded Program on Immunization, which focused on the delivery of effective vaccines to infants. Also during the 1970s, two large international research programs were initiated under the cosponsorship of various United Nations agencies: the Special Program for Research on Human Reproduction (focusing on development and testing of new contraceptive technologies) and the Tropical Disease Research Program (providing support for the development of better means of diagnosis, treatment, and prevention of six tropical diseases, including malaria). Greater attention also was given to chronic diseases, such as cardiovascular and cerebrovascular diseases and cancer.

In 1978 WHO organized a conference in Alma Ata in the then Soviet Union that gave priority to the delivery of primary health care services and the goal of health for all by the year 2000. Rather than focusing only on control of specific diseases, this conference called for international public health efforts to strengthen the capacities of low- and middle-income countries to extend their health services to populations with poor access to prevention and care. The concerns of tropical medicine, which were concentrated on the infectious diseases of warm climates, were being replaced by an emphasis on the provision of health services to reduce morbidity and premature mortality in resource-poor settings (DeCock, Lucas, Mabey, & Parry, 1995). Given the limited financial and managerial capacities of many governments, increased attention was paid to the role of NGOs in providing these services. As a result, many mission hospitals, particularly in sub-Saharan Africa, expanded their activities in their local communities, the number of local NGOs began to increase, and a number of international NGOs (e.g., Save the Children, Oxfam, Medecins sans Frontières) greatly expanded their services, often with support of bilateral agencies. Disease-specific efforts, most notably UNICEF's Child Survival Program, with its acronym GOBI (growth charts, oral rehydration, breastfeeding, immunization) and its goal of universal childhood immunization by the year 1990, were seen by many as programs that both focused on specific health problems and provided an excellent means of strengthening health systems.

The emergence of what is sometimes called "the new public health" was heralded by the Ottawa Charter of 1986, which was meant to provide a plan of action to achieve the Health for All targets set forth at Alma Ata. The Ottawa Charter pioneered the definition of health as a *resource* for development, not

merely a desirable outcome of development. The prerequisites for health that were outlined in the charter were diverse and included peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice, and equity. The charter emphasized the importance of structural factors that affect health on a societal level, rather than focusing only on the risk behaviors of individuals. It called on the worldwide public health community to address health disparities by engaging and enabling people to take charge of their health at community and policy-making levels. This shift from a "risk behavior" focus to one of "risk environment" continues to resonate in contemporary public health practice and research.

The one new and unexpected development in the 1980s was the arrival of the HIV/AIDS epidemic. By the time a simple laboratory test to detect HIV was discovered in 1985, more than 2 million persons in sub-Saharan Africa had been infected. In 1987, WHO formed the Global Program on AIDS, which within 2 years became the largest international public health effort ever established, with an annual budget of \$90 million and 500 staff working in Geneva and in more than 80 low- and middle-income countries and regions. In 1995, with some 20 million persons (mostly living in these lower-income countries) infected with HIV, and with the understanding that the epidemic could only be brought under control through a true multisectoral effort, the program was transformed into a joint effort of UN agencies known as UNAIDS.

At the turn of the century, after more than 20 million persons had died from AIDS, particularly in sub-Saharan Africa, the pandemic finally began to receive the attention it deserved from governments and international organizations. In June 2001, the United Nations General Assembly convened a Special Session on HIV/AIDS (UNGASS), which adopted the Declaration of Commitment on HIV/AIDS emphasizing the importance of strong leadership, universal access to treatment and care for HIV-positive persons, and strengthening of prevention programs. The following year, the Global Fund for AIDS, Tuberculosis and Malaria (GFATM) was established as an independent financial instrument for developing countries to obtain the needed resources to combat these three diseases. In 2003, the United States pledged \$15 billion over a 5-year period (known as the President's Emergency Plan for AIDS Relief, or PEPFAR) to reduce the burden of HIV/AIDS in 15 high-prevalence countries. Shortly thereafter, the World Health Organization launched an initiative to treat 3 million HIV-positive people in developing countries by the end of 2005 with generic fixed-dose combination antiretroviral med-

ications. Despite these and other efforts, the pandemic continues to expand and now promises to be the most devastating global pandemic since the Black Death of the Middle Ages (see Case Study on page XX–XX).

In the last decade of the twentieth century, changes well beyond the health sector had a marked impact on its style of operation. Major shifts in political and economic ideologies led to a reconsideration of the role of governments and how they should finance and deliver public services. Much greater attention was given to focusing government's role more narrowly and to making greater use of the private sector. Indeed, international public health in the last decade of the twentieth century and the first decade of the twenty-first century can be characterized by emphases on health sector reform, cost-effectiveness as an important principle in the choice of interventions in the public sector, and public-private partnerships in health, paralleled by a rapid expansion of information and communications technologies.

Although rising incomes have been known for a long time to improve health status, during the past decade there has been increased attention to the importance of a healthy population for economic development. Participation of sectors other than the health sector is now viewed as essential for achieving a healthy population. More and more countries, experiencing the demographic transition from societies in which most persons are young to societies with rapidly increasing numbers of middle-aged and older adults, have had to provide preventive and care services that address health problems of both the poor and wealthy simultaneously. Witness the fact that India now has the largest middle class in the world, with high rates of cardiovascular and other noncommunicable diseases. Not surprisingly, issues regarding equity in the availability of drugs and vaccines and in access to other technological advances, and regarding the ethics of international research, have gained greater attention. Healthy populations are now viewed as essential for domestic security as well as economic development. The challenges of international public health have never been greater.

Current Challenges in International Public Health

We have witnessed major improvements in the health of populations over the past century, with the pace of change increasing rapidly in low- and middle-income countries since the Bretton Woods Conference. Public health—and, more broadly, an improved under-

standing of how social, behavioral, economic, and environmental factors influence the health of populations—has contributed to these improvements to an extent far greater than access to medical care. However, these improvements have not been universal. For example, at the beginning of the twenty-first century, the following facts are true:

- Nearly 11 million children below age 5 die each year from preventable causes such as pneumonia, diarrhea, malaria, malnutrition, measles, and HIV/AIDS; 98% of these deaths occur in developing countries.
- More than 120 million women want to space or limit childbearing, but do not have access to modern contraceptives.
- Nearly 600,000 women die annually from complications of pregnancy and childbirth, and another 30 million suffer pregnancy-related health problems that can be permanently disabling.
- Each year 13 million persons die from infectious diseases, most of which are preventable or curable; half of these deaths are in adults and are due to tuberculosis, malaria, or HIV/AIDS.
- Worldwide, 1.2 billion people do not have access to clean water.
- More than 300 million adults worldwide are obese, putting them at significantly increased risk for cardiovascular diseases, diabetes, hypertension, cancer, stroke, and musculoskeletal disorders.

There is a broad consensus that poverty is the most important underlying cause of preventable death, disease, and disability. Unfortunately, more people live in poverty today than 20 years ago. Literacy, access to housing, safe water, sanitation, food supplies, and urbanization are determinants of health status that interact with poverty. Economic globalization, driven by increasing world trade, greater openness of national economies to world markets, and the vast expansion of information technology, has contributed to uneven economic growth, increased economic inequality, and concerns about subordination of human and labor rights (Ahmad, 1999).

Numerous dynamic challenges face public health in the twenty-first century. Infectious diseases, once thought to have been vanquished as major killers, have emerged or reemerged around the world as top threats to health and well-being. Some of these are caused by more virulent variations of familiar, well-understood microbial agents (e.g., multidrug resistant

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tuberculosis), whereas others have traveled from endemic regions to previously unaffected areas (e.g., West Nile virus), and still others have yet to be fully characterized or understood (e.g., the coronavirus responsible for severe acute respiratory syndrome, or SARS). The underlying causes for many emerging infectious diseases can be traced to human-initiated social and environmental changes, including climatic and ecosystem disturbances, trends in food and meat consumption and production, and unsafe medical practices (Kuiken et al., 2003).

Noncommunicable or chronic diseases were once considered the problem of industrialized nations that had achieved long life expectancies. Today, millions of people in low- and middle-income countries suffer from chronic conditions such as poor nutrition (including the burden of overnutrition or obesity), cardiovascular disease, hypertension, and diabetes (Yach, Leeder, Bell & Kistnasomy, 2005). Globalizing forces that have imported Western lifestyle habits, such as tobacco smoking and increased consumption of processed foods, have hastened these disease trends. Mental illnesses, and depressive disorders in particular, remain a largely ignored and major source of death and disability worldwide.

In the first decade of the twenty-first century, we have also witnessed the addition of multifaceted and complex issues to the list of public health challenges, among them human migration and displacement, bioterrorism, and disaster preparedness.

It is within this context that the United Nations General Assembly adopted the Millennium Declaration in September 2000 as a set of guiding principles and key objectives for international cooperation. The declaration underscored the need to address inequities that have been created or worsened by globalization and to form new international linkages to achieve and protect peace, disarmament, poverty eradication, gender equality, the environment, human rights, and good governance. The goals dealing specifically with development and poverty eradication have become known as the Millennium Development Goals (MDGs), three of which explicitly refer to health (shown in bold in Exhibit I-4). All 191 member states of the UN have pledged to meet the MDGs by 2015.

The resources required to achieve the MDGs were initially spelt out by a WHO Commission on Macroeconomics and Health (WHO, 2001) and have subsequently been refined (Sachs & McArthur, 2005). Meeting them will require new forms of international and intersectoral cooperation between UN agencies with an established health role, other international bodies such as the World Trade Organization, regional bodies such as the European Union, bilateral

Exhibit I-4 Millennium Development Goals

- Halve extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- **Reduce under-5 mortality by two-thirds**
- **Reduce maternal mortality by three-quarters**
- **Reverse the spread of HIV/AIDS, malaria, tuberculosis, and other major diseases**
- Ensure environmental sustainability
- Develop a global partnership for development, with targets for aid, trade, and debt relief

agencies, NGOs, foundations, and the private sector, including pharmaceutical companies. It also must include the new philanthropists in international health—people such as Bill and Melinda Gates, George Soros, and Ted Turner—who bring not only significant amounts of funds into the global system but also a new, more informal and personal style of operations. Ensuring the ideal formation and effective functioning of this global health system will itself be an enormous challenge for the next decade of international public health.

Use and Content of This Textbook

This textbook has been prepared with these challenges foremost in mind. Its focus is on diseases, programs, health systems, and health policies in low- and middle-income (or developing) countries, making reference to and using examples from the United States, Western Europe, and other high-income countries as appropriate.¹ The individual chapters present information on health problems and issues that transcend national boundaries and are of concern to many nations.

Our intent has been, first and foremost, to provide a textbook for graduate students in various disciplines who are studying international public health. Given its broad range of content, the book as a whole may serve as the main source for an introductory graduate course on international public health. Experience with the First edition has shown that the textbook can be used as a reference text for undergraduate courses in public health or global health. Alternatively, some chapters (or parts of chapters) can be used in graduate or undergraduate courses dedicated to more specific subjects and topics. Students who use the textbook in

¹A classification of countries can be found on the World Bank website: <http://www.worldbank.org/data/countryclass/countryclass.html>.

this way will hopefully be stimulated to explore other chapters once they have read the ones they have been assigned. We believe the textbook can also be a useful reference for those already working in the field of international public health in government agencies, as well as those employed by international health and development agencies, NGOs, or the private sector.

Because of the many dynamic areas and subjects we wanted to cover, we chose to prepare an edited textbook. We selected content experts for each chapter rather than presuming to have the expertise to write the entire book ourselves. We recognize that an edited textbook has its shortcomings, such as some inconsistency in style and presentation and occasional overlap in chapter contents. We have done our best to limit these, and hope the reader will agree that those that remain are a small price to pay for fulfilling our goal of providing the reader with the highest-quality content.

Another consequence of the dynamic nature of international public health is the occasional difficulty in providing the most up-to-date epidemiologic information on all causes of mortality and morbidity. One obvious example of this is the rapidly evolving HIV/AIDS situation in Africa and Asia. To assist the reader in obtaining this information, we have provided references in various chapters, including Internet resources.

This is the second edition of the textbook. In planning its preparation, we sought advice on how to improve it from many of those who prepared chapters in the first edition, as well as from faculty in various countries who were using the textbook in their courses.

The textbook has 15 chapters. The first two chapters set the background. Chapter 1 reviews the importance of using quantitative indicators for decision making in health. It presents the latest developments in the measurement of health status and disease burden, including the increasing use of composite measures of health that combine the effects of disease-specific morbidity and mortality on populations. It then reviews current estimates and future trends in selected countries and regions, as well as the global burden of disease. Chapter 2 examines the social, cultural, and behavioral parameters that are essential to understanding public health efforts. It does this by describing key concepts in the field of anthropology, particularly as they relate to health belief systems, and by presenting key theories of health behavior that are relevant to behavior change and examples of specific national and community programs in various areas of health. The importance of combining qualitative and quantitative methodologies

in measuring and assessing health status and programs is emphasized.

The next three chapters are devoted to the three greatest public health challenges traditionally faced by low-income countries: reproductive health, infectious diseases, and nutrition. Reproductive health has long been addressed primarily through family planning programs directly intended to reduce fertility. Chapter 3 presents more current views of reproductive health that broaden this concept to include empowerment of women in decisions about health and fertility. It provides information on population growth and demographic changes around the world and reviews how women control their fertility and indexes the effects of various social and biological determinants of fertility. It then examines the impact of family planning services and programs on the reduction of fertility and unwanted pregnancies and on the health of children and women.

Collectively, infectious diseases have undoubtedly been the most important causes of premature mortality and morbidity in low- and middle-income countries. Chapter 4 presents the descriptive epidemiologic features and available prevention and control strategies for the communicable diseases that are of greatest public health significance in these countries today. These include the vaccine-preventable diseases; diarrhea and acute respiratory infections in children; tuberculosis, malaria, and other parasitic diseases; HIV/AIDS and other sexually transmitted diseases in adults; and the emerging infectious diseases. Examples of successful programs using one or more of the available control approaches—preventing exposure, immunization, drug prophylaxis, and treatment—are described, as are the challenges and obstacles that confront low- and middle-income countries in successfully controlling these diseases.

Nutritional concerns in low- and middle-income countries are diverse, ranging from deprivation and hunger and consequent deficiencies in health, survival, and quality of life to obesity and chronic diseases in some regions. Chapter 5 focuses on several spheres of nutrition that are of utmost concern in these countries. These include undernutrition and its components of protein malnutrition and micronutrient deficiencies (particularly vitamin A, zinc, iron, and iodine) at various stages of life; food insecurity; the interaction of nutrition and infections; the role of breastfeeding and complementary feeding in ensuring healthy children; and the nutrition transition observed in more affluent segments of populations in rapidly developing countries.

The book's subsequent four chapters address public health priorities that have been associated with

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higher-income countries but are gaining importance in resource-poor countries as they become more developed economically and their populations live longer and progress through the demographic transition. These are chronic diseases, injury, mental health, and environmental health.

Chronic diseases, frequently called *noncommunicable* or *degenerative diseases*, are generally characterized by a long latency period, prolonged course of illness, noncontagious origin, functional impairment or disability, and incurability. Chapter 6 provides an overview of chronic diseases in low- and middle-income countries, with particular attention given to cardiovascular diseases (mainly coronary artery disease and stroke), common cancers, chronic respiratory diseases, and diabetes. The descriptive epidemiology and economic implication of these diseases, the behavior risk factors that serve as determinants, and the main approaches, programs, and policy responses required to adequately prevent and manage these diseases at national and global levels are presented.

The subject of injuries is covered in a separate chapter (Chapter 7) in this second edition, reflecting the greater importance and recognition of this problem during the past decade. The subject includes unintentional injuries (ones for which there is no evidence of predetermined intent, such as road accidents and occupational injuries) and intentional injuries or violence that is planned or intended (including injuries related to self-directed, interpersonal, and collective violence). The chapter provides an overview of the global burden of injuries, outlines the causes and risk factors for them, describes interventions that can reduce their impact, and considers the opportunities and challenges that can move forward an injury prevention agenda at a global level.

It is only recently that mental health has received attention commensurate with its great importance to the disability and disease burden in low- and middle-income countries. Chapter 8 charts the historical development of public mental health; considers various concepts and classifications of mental disorders, taking into account the influence of cultural factors in the development of psychiatric classifications; and reviews what is known about the epidemiology and etiology of the more common disorders, particularly mood and anxiety disorders, schizophrenia, and substance abuse. Lastly, the chapter reviews the status of national efforts to date in resource-limited countries regarding primary, secondary, and tertiary prevention programs for the major mental disorders and

concludes with a discussion of the ten mental health priorities for low- and middle-income countries put forth by the 2001 World Health Report.

Chapter 9 provides a comprehensive review of environmental health issues and problems in low- and middle-income countries. It begins with a summary of conceptual and methodological issues that constitute the important area of risk assessment and monitoring, and then reviews the profiles of environmental health hazards within the household (e.g., water and sanitation), in the workplace (e.g., on farms, in mines and factories), in the community (e.g., outdoor air pollution), and at regional and global levels. The latter includes such controversial topics as climate change, ozone depletion, and biodiversity. The chapter concludes with a discussion of the issues and projects that bear on the future of environmental health research and policy.

Chapter 10 focuses on the public health challenges that characterize complex emergencies (CEs). These conflicts occur within and across state boundaries, have political antecedents, are protracted in duration, and are embedded in existing social, political, economic, and cultural structures and cleavages. At the start of 2004 there were an estimated 4.4 million internally displaced persons and 10 million refugees seeking asylum across international borders, the vast majority fleeing conflict zones. The chapter considers the causes of CEs (particularly the political causes) and their impact on populations and health systems, and reviews the technical interventions that can limit their adverse effects on the health of populations. Attention is drawn to the importance of an effective and efficient early response in influencing the long-term survival of populations and health systems and the nature of any postconflict society that is established. The chapter also reviews the impact of one natural disaster, the destructive tsunami that occurred off the coast of Indonesia in late 2004, because it has many elements of a CE.

The next two chapters are concerned with the development and implementation of effective health systems, which have a crucial influence on the ability of countries to address their disease burden and improve the health of their populations. Chapter 11 focuses on the design of health systems considered largely from an economic perspective. It provides a conceptual map of the health system along with its key elements; addresses the fundamental and often controversial question as to the role of the state; and then considers the key functions of any health system, which include regulation, financing, resource allocation, and provision. It concludes by reviewing current trends in health system reform. Four country exam-

ples are used throughout the chapter to illustrate key differences in health systems across the world.

As multipurpose and multidisciplinary endeavors, health systems require coordination among numerous individuals and units. Thus, they require effective and efficient management. Chapter 12 is dedicated to this topic, which is defined as the process of making decisions as to how resources will be generated, developed, and used in pursuit of particular organizational objectives. It details the important aspects of the political, social, and economic context in which a management process must operate; discusses the organizational structures under which health care systems may be organized; examines the critical process of planning and priority setting; looks at issues in the management of resources, focusing on finance, staffing, transport, and information; and concludes by discussing some cross-cutting themes, such as management style, accountability, and sustainability.

Health and health systems interrelate with a nation's economy in two main ways. The first, as noted earlier, comprises the bidirectional relationships between health status and national income and development. For example, health affects income through its impact on labor productivity, saving rates, and age structure, while a higher income improves health by increasing the capacity to produce food and to have adequate housing and education, and through incentives for fertility limitation. The second concerns linkages between health care delivery institutions, health financing (including insurance) policies, and economic outcomes. Chapter 13 reviews information available on both these challenging and closely related topics that are critical to government policy makers seeking the best ways to improve the quality of life of their populations, particularly in those countries that carry the heaviest burden of disease and poverty.

Chapter 14 presents the current state of affairs regarding global cooperation in international public health. It begins by explaining why countries seek this cooperation, the processes by which it occurs, and the institutions and actors involved. The remaining part reviews the important shift that has taken place in the overall framework of international cooperation since the establishment of the United Nations system in the late 1940s, from one characterized by vertical relationships between states and international and intergovernmental organizations, to one of horizontal, cooperative participation resulting in partnerships and alliances among nation states, UN agencies, the private sector, and NGOs. This shift has great significance for the formation of future in-

ternational public health policies and programs and for approaches to global governance in the area of international health.

The final chapter provides an overview of how globalization is affecting international health at the start of the twenty-first century. It begins by seeking to define the term *globalization* and its key causes (or drivers) and explores how the many changes it is causing are having positive and negative impacts on human societies. A discussion of the links between globalization and shifting patterns of infectious and chronic diseases follows. The chapter then explores the impact of globalization on health care financing and service provision, using as examples the migration of health workers, the restructuring of the pharmaceutical industry, and the global spread of health sector reforms. It concludes by suggesting ways in which the international public health community can promote and protect health in the era of globalization.

The reader will note that there are many case studies presented in exhibits scattered throughout the text. These have been written to provide concrete examples and illustrations of key points and concepts covered in each chapter. At the conclusion of each chapter is a list of questions that can help course instructors stimulate classroom discussions about important issues covered in the chapter. The editors recognize that the book could include separate chapters on additional topics—maternal and child health, women's health, health and human rights, and demography, to name but a few. We have opted instead to provide in-depth information on the core subjects that were selected, although we did our best to cover some aspects of all of the subjects just listed in one or more of the chapters.

In many ways, international public health is at an important crossroad. Its greatest challenge is to confront global forces while at the same time promoting local, evidence-based, cost-effective, public health programs that deal with disease-specific problems and more general issues, such as poverty and gender inequality. Public health-related research is essential to gain a better understanding of the determinants of illness and of innovative approaches to prevention and care and to find means of improving the efficiency and coverage of health systems. Whether as a practitioner, policy maker, or researcher, international public health professionals can make an enormous difference by being well trained in their discipline and highly sensitive to the beliefs, culture, and value systems of the populations with whom they collaborate or serve. We hope this textbook will aid in this process.

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Acknowledgments

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This book is a collaborative effort of 39 authors around the world. Many people helped us bring it into being. Principal among these is Heidi Richard, the project's coordinator from the Department of Epidemiology and Public Health at Yale, who helped ensure that everyone met the many production deadlines, served as liaison to all constituents, and coordinated our activities with the publisher. We would also like to thank the co-editors' assistants, Nicola Lord (London School of Hygiene and Tropical Medicine) and Barbara Ewing (Johns Hopkins Bloomberg School of Public Health), who assisted in meeting the deadlines and facilitating communications between the editors.