

## Chapter 1

# Accomplishments, Challenges, and Priorities

It is time for a checkup of human health around the globe. Many people are living longer, healthier lives than ever before, but many others still lack access to the most basic health care, and the gap between the health care haves and have-nots has actually widened for some fundamental services. As for infectious diseases, while the medical community is successfully controlling some of them—and has even eradicated one—new diseases are emerging, some of which are caused by mysterious viruses that cross species or mutate quickly. Other major components in the global disease burden arise from human behavior and the harmful choices that people make both individually and collectively.

*Disease Control Priorities in Developing Countries*, 2nd edition (DCP2) (Jamison and others 2006) is intended as a checkup both for health and for health care. What progress has the medical community made in identifying and reducing the global disease burden? How much have countries accomplished in developing and providing efficient, effective, and equitable health care? How should countries set and achieve priorities in health?

In 1993, the first edition of *Disease Control Priorities in Developing Countries* (Jamison and others 1993) presented knowledge about the distribution of the disease burden in developing countries, up-to-date information about many of these diseases, and data on the cost-effectiveness of interventions available to address them. The book helped to inform and galvanize health sector policies in countries around the world by demonstrating the benefits of redirecting efforts toward diseases with large burdens and doing so with cost-effective interventions. It provided a conceptual basis for discussing the allocation of resources in the health sector while illustrating the linkages between prevention and treatment, between public health care and



personal health care services, and between the health sector and other sectors. The information and analysis provided in the 1993 publication helped many developing countries define basic packages of health care; guided their management decisions about training, supplies, and equipment; and aided the design of social insurance programs. The book also informed numerous other publications during the 1990s, including the *World Development Report 1993: Investing in Health* (World Bank 1993).

Now, 13 years later, *DCP2* assesses subsequent accomplishments, remaining and emerging challenges, and new opportunities for improving health in the developing world. This new publication goes beyond its predecessor in several ways, namely:

- It includes discussion of a larger number of diseases and conditions, covering the full range of infectious diseases, reproductive issues, children’s health issues, noncommunicable diseases, and injuries, as well as risk factors and consequences of disease.
- It provides cost-effectiveness analysis that is more thorough and more comparable across conditions and regions than was possible in the earlier edition.
- It devotes considerable attention to implementation, examining the delivery, management, and financing of health care.
- It addresses cross-cutting issues, such as gender differences in health status and the ethics of resource allocation.

Thus this new publication is a comprehensive, updated assessment of the medical, economic, and management knowledge that can now be harnessed to ease the global burden of disease and improve human health.

## HISTORICAL ACHIEVEMENTS IN WORLD HEALTH

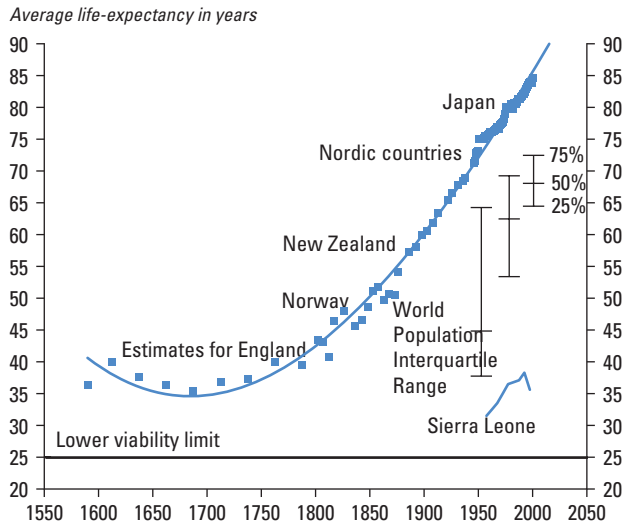
“Until the 19th century, deaths of infants and children were commonplace worldwide.”

Any checkup should include a case history.<sup>1</sup> A review of the unprecedented improvements in human health in the last century provides important perspectives on the current situation.

Until the 19th century, deaths of infants and children were commonplace worldwide. Poor nourishment left most people stunted by today’s standards. Infectious diseases such as smallpox, measles, and

<sup>1</sup> For historical perspectives on health and health care, see *DCP2* chapter 1.

**Figure 1.1** Limits and Convergence for National Average Female Life-Expectancy at Birth



Source: Oeppen 1999.

tuberculosis decimated entire communities and left many people scarred and crippled. Life expectancy was low throughout the world. Even for women in England, who had the world’s highest average lifespan between 1600 and 1840, life expectancy fluctuated between 35 and 45 years, half what it is today (figure 1.1).

This overall picture has changed rapidly and dramatically since the mid-19th century. The medical community brought many infectious diseases under control, and even eradicated smallpox; better nutrition and overall health conditions lowered mortality rates for everyone, especially children; and life spans increased dramatically. After 1840, the upward trend in life spans proceeded at a surprisingly sustained and uniform rate of increase of 2.5 years per decade for the next 160 years. By 1900, the highest average life expectancy just surpassed 60 years; by 2000, it exceeded 80 years.

However, even though the gains in health and life expectancy have not been uniform around the globe and have not occurred at the same time or to the same extent, they have been widespread:

- Smallpox was eradicated worldwide by 1977.
- Polio remains in only a handful of countries.

**Table 1.1** Levels and changes in Life Expectancy, 1960–2002, by World Bank Region

Region	Life expectancy (years)			Rate of change per decade (years)	
	1960	1990	2002	1960–90	1990–2002
Low- and middle-income	45.2	63	65	6.3	1.7
East Asia and the Pacific (China)	39 (36)	67 (69)	70 (71)	9.3 (11)	2.5 (1.7)
Europe and Central Asia	n/a	69	69	n/a	0.0
Latin America and the Caribbean	56	68	71	4.0	2.5
Middle East and N. Africa	47	64	69	5.7	4.2
South Asia (India)	44 (44)	58 (59)	63 (64)	4.7 (5)	4.2 (4.6)
Sub-Saharan Africa	40	50	46	3.3	–3.3
High-income	69	76	78	2.3	1.7
World	57	70	72	4.3	1.7

Source: World Bank 2004.

Note: Entries are the average of male and female life expectancies.

- Diphtheria, whooping cough, measles, and tetanus are rare or absent in many parts of the world.
- Child mortality, while still high in many places, has declined almost everywhere.
- Average life expectancy has increased—albeit with setbacks—around the world. Between 1960 and 2002, average life expectancy rose from 36 to 71 years in China, from 56 to 71 years in Latin America and the Caribbean, from 47 to 69 years in the Middle East and North Africa, and from 44 to 63 years in South Asia. Even in Sub-Saharan Africa, average life expectancy rose from 40 to 50 years in 1990 before falling back to 46 years in 2002, largely because of the spreading HIV/AIDS epidemic (table 1.1).

Even though life expectancy in high-income countries exceeds that in developing regions, convergence is notable. In 1910, for example, a male born in the United States could expect to live 49 years, but had he been born in Chile, his life expectancy would have been only 29 years. By the late 1990s, in contrast, U.S. life expectancy had reached 73 years and that of Chile had reached 72 years.

## ACCOUNTING FOR HEALTH GAINS

A host of factors account for the remarkable and widespread gains in human health during the 20th century, including changing demographics, rising productivity, urbanization, increased food supplies, medical science, sanitation, and institutional change. Some historical analyses emphasize one critical factor in a search for the one that underpins the rest, while other approaches emphasize the interplay of several factors. Efforts to understand the unprecedented changes in human health in the 20th century have involved exploration of theories of history and the nature of causation and how they have contributed to the study of epidemiology. Many different accounts are possible, but for our purposes—deriving lessons from this unprecedented historical trajectory—the following two clear messages emerge:

- Income growth by itself cannot account for the dramatic improvements in health in the last century, nor can it be relied upon as the only strategy for making progress on health in the future.
- Technical progress, in the broadest sense, works. It has been, and can be, the basis for substantial health gains, even when income growth is slow or stagnant.

While economic development and income growth are certainly among the factors that help explain the remarkable health gains of the 20th century, declining mortality in Europe was only weakly correlated with periods of economic growth in the 19th and early 20th centuries, and more recent experiences in many places, including Cuba, Sri Lanka, and the state of Kerala in India, demonstrate that dramatic improvements in health can occur without high or rapidly growing incomes. The pace of health improvements in so many different countries at different levels of economic development and with disparate rates of income growth demonstrates that other factors can and do play a leading role.

An increasing number of studies attribute last century's remarkable health gains not so much to increased wealth as to technical progress. In this context, technical progress refers to any advance in knowledge that leads to practical improvements. It includes the development and application of sophisticated treatments, such as organ transplants and angioplasty, and also simple treatments, such as oral rehydration

“Technical progress, . . . has been, . . . the basis for substantial health gains, even when income growth is slow or stagnant.”

therapy, whereby a child suffering from diarrhea is given liquids containing a few simple ingredients to drink to prevent death from dehydration. It includes progress in preventive care, such as new, more effective, or easier to administer vaccines along with simple behavioral changes, like keeping newborns warm and ensuring that their umbilical cords are clean and free of infection. It also includes innovative methods for delivering standard treatment, such as directly observed therapy short course (DOTS), an internationally disseminated strategy that has effectively combated the spread of tuberculosis (TB) in many countries.

Technical progress also comprises institutional and managerial innovations. These may include organizing and administering public health functions for the first time in a country or doing so in novel and more effective ways. They may involve identifying and training new cadres of health workers, developing new means of surveillance to track a disease and then target vaccination campaigns, or taking steps to improve the accessibility and quality of care.

In the sphere of economics and public policy, technical progress comprises improvements in allocating funds as a result of studying the efficacy of interventions and strategies and assessing their cost-effectiveness. It encompasses the development of new methods for financing health systems, such as mobilizing public resources or pooling existing financial resources, and new strategies for paying providers and purchasing health services. The creation of social security systems and national health services is another form of this kind of technical progress that helps to insure millions of families against the high costs of serious illnesses and injuries. *DGP2* illustrates the many ways that collective action through public financing has led to substantial health gains for society.

“The creation of social security systems and national health services is another form of . . . technical progress . . .”

Technical progress outside the health sector has also contributed to improving health. Notably, rising agricultural productivity has improved nourishment for a large part of the world’s growing population. In addition, improvements in such infrastructure as housing, sanitation, potable water, and safe roads have made significant contributions to health. Investments in education, which help increase literacy and thereby facilitate the diffusion of messages about healthy living, have had an important impact as well.

The boundary between institutional innovations and broader social change is not easily defined, and social changes have contributed substantially to progress in health. One of the most prominent of these social

changes has involved women's status, including their political rights, education, and other forms of empowerment. These improvements in women's status have contributed to improving not only women's own health, but also the health of their families and societies.

When countries have adopted technical changes such as these, people's health has improved even in the absence of societal wealth or economic growth. Between 1950 and 1980, low- and middle-income countries such as Chile, Costa Rica, Cuba, and Sri Lanka adopted basic approaches to improving public health, including sanitation, routine immunization, and improved birth attendance, with remarkable reductions in infant, child, and maternal mortality. Countries with similar economic profiles that failed to adopt such measures lagged behind. A cross-country econometric analysis shows that countries that made rapid technical progress reduced infant mortality by as much as 5 percent annually compared with countries that made little or no technical progress.<sup>2</sup> Even poor countries with weak public institutions, as well as those mired in violent conflict, have made important health gains through vaccination campaigns that eradicated smallpox worldwide, eliminated polio in most of the world, or controlled other endemic infectious diseases. By embracing technical progress in its myriad forms, progress in health is possible.

Health gains in the last century were not only unprecedented but were dramatic relative to trends in economic growth and to local institutional capacity. Indeed, "income growth is neither necessary nor sufficient for sustained improvements in health. Today's tools for improving health are so powerful and inexpensive that health conditions can be reasonably good even in countries with low incomes" (*DCP2*, chapter 1, p. 8).

## HEALTH AND ECONOMIC GROWTH

Researchers have frequently overlooked the importance of the dramatic health gains of the 20th century for human welfare because they have been difficult to quantify, and also because another measure of well-being, growth in national income, has been the standard indicator of a country's progress. Several studies have sought to redress this problem by estimating the value, in monetary terms, of increased longevity.

<sup>2</sup> Specifically accounting for the different pace of technical progress has also demonstrated that the effect of health on income is significantly stronger than the effect of income on health. For further discussion of the economic benefits of health, see *DCP2*, chapter 1.

“. . . countries that made rapid technical progress reduced infant mortality by as much as 5 percent annually compared with countries that made little or no technical progress.”

“... the rate at which increasing longevity raised Americans’ well-being matched or exceeded the sixfold increase in real income during the first half of the 20th century.”

When the value of these additional life years is added to national income, the resulting sum, known as full income, comes closer to measuring human welfare. Calculations of this kind for the United States have shown that the rate at which increasing longevity raised Americans’ well-being matched or exceeded the sixfold increase in real income during the first half of the 20th century. Paying attention to the value of increased longevity also tempers assessments of global inequality because, since the 1950s, life expectancy in poorer countries has converged toward the life expectancy high-income countries enjoy.

Researchers have also underestimated the importance of health improvements to human welfare: better health itself contributes to economic growth. Indeed, while economic growth is not essential for health, health may be crucial for economic growth. Numerous studies have demonstrated that the healthier people are the more productive they are. These studies include focused experiments, such as demonstrations that agricultural workers are more productive after being treated for anemia. They also include broad historical research indicating, for example, that as much as half of British growth during the Industrial Revolution could be attributed to improved nourishment, and therefore to healthier and more productive workers. Cross-country studies have demonstrated that reductions in adult mortality accounted for 10 to 15 percent of economic growth between 1960 and 1990 and that one additional year of life expectancy is associated with a sustained increment of 4 percent in national income.

## EQUITY

The broad historical perspective on human health is reassuring in many ways. The overarching trends are positive, with unprecedented gains, widespread advances, and converging health status. However, these positive trends mask the uneven progress that has left large numbers of people behind and at a disadvantage. No process of setting priorities and designing strategies for improving health can ignore the pervasive large inequities. As *DCP2* (chapter 1, p. 5) observes, “In far too many countries health conditions remain unacceptably—and unnecessarily—poor. This factor is a source of grief and misery, and it is a sharp brake on economic growth and poverty reduction.”

Given today’s tools and resources, health conditions could be reasonable everywhere, but for far too many people “reasonable” health conditions are not the norm. Children born in low-income countries have

“... half of British growth during the Industrial Revolution could be attributed to improved nourishment...”



much smaller chances of leading a long life with good health than those born in higher-income countries. Women generally lead longer lives than men, but their lives tend to be marked by poorer health (*DCP2*, chapter 10). Where societies deny women rights of inheritance, political voice, legal standing, or education, those women suffer from more diseases and injuries and have less access to treatment and services. Other socially marginalized groups, whether large groups like indigenous populations, rural dwellers, and migrant workers or smaller groups like sex workers and street children, suffer from similar excessive disease burdens.

Equity is a major subtext throughout *DCP2*.<sup>3</sup> Each disease-specific chapter notes the distribution of the disease burden and identifies where this burden is concentrated, whether in particular regions or populations. Discussions of interventions assess their effectiveness relative to different age, gender, cultural, and social groupings, and analyses of delivery mechanisms address the barriers to accessing appropriate and timely health care as those barriers vary across population groups. As the authors of the chapter on integrated management of childhood illness (IMCI) observe, “The challenge of improving equity is not unique to IMCI or to child survival; it affects virtually every intervention and delivery strategy. *Unless equity considerations become a key part of policy making and of monitoring outcomes, interventions may widen instead of narrow inequity gaps*” (*DCP2*, chapter 63, p. 1189, emphasis added).

Health inequities, many of which are plainly visible, can be documented when researchers disaggregate analyses by the relevant divisions in society, for example, age, gender, income, ethnicity, or region. The resulting patterns of inequity can be seen at three different levels: large disparities in health status, differential access to and use of health care services, and disproportionate exposure to health risks.

### Patterns of Inequity in Health Status

The reassuring picture painted by rising global averages obscures substantial disparities in health among different regions of the world and different income brackets, genders, and age groups. A child born in Ethiopia today, for example, has a 20 percent chance of dying before the age of five compared with a less than 1 percent chance for a child born in North America or Western Europe. During 1990–2002, the mortality rate

“Women generally lead longer lives than men, but their lives tend to be marked by poorer health . . .”

“During 1990–2002, the mortality rate for children under five remained stagnant or increased in 27 countries.”

<sup>3</sup> The issue of equity is addressed in virtually every chapter of *DCP2*. The most explicit discussion is contained in chapter 3, but see also chapters 9, 10, 59, and 63.

“The excess disease burden for women is not exclusively a result of diseases related to maternal conditions, . . .”

for children under five remained stagnant or increased in 27 countries. A woman’s risk of death in childbirth is less than 20 per 100,000 births in high-income countries, but the average exceeds 900 per 100,000 births in the lowest-income countries. Progress on reducing maternal mortality has slowed, and has even reversed, in some countries, and thus the gap is widening.

The excess disease burden for women is not exclusively a result of diseases related to maternal conditions, but includes a higher incidence of illnesses that derive from inequitable gender roles; for example, in Sub-Saharan Africa, teenage girls are 5 to 16 times more likely to be infected with HIV than teenage boys. In China, India, and other parts of South Asia, neglect of female children, gender-selective abortions, violence, and other causes of excess mortality mar the lives of women, leading to the haunting estimates of millions of women who are therefore missing from population counts.

In many of the former Soviet republics, life expectancy declined among men in the 1990s because of a rise in alcoholism and social dislocation and the deterioration of basic health infrastructure. By far the worst calamity of recent years has hit Sub-Saharan Africa, where HIV/AIDS is reducing average life expectancy and increasing mortality from opportunistic infections, TB, malaria, and malnutrition.

Large disparities in health can also be found within countries. Western China, for example, lags far behind China’s wealthier coastal regions in its health profile, and indigenous populations in Latin American countries have shorter, less healthy lives than other segments of the population. Indeed, researchers regularly find that in most countries the poor live shorter, less healthy lives than the rich.

### **Patterns of Inequity in Health Care Provision**

Inequity is also evident from disparities in health care services, for instance:

“Coverage levels for effective interventions to improve child survival are remarkably low in most developing countries.”

- Coverage levels for effective interventions to improve child survival are remarkably low in most developing countries. A review of the 42 countries that account for 90 percent of global child deaths showed that only two out of nine key interventions reached more than half of all children.
- In 1999, skilled birth attendants assisted less than half the women giving birth in Sub-Saharan Africa.

- One-third of the world’s population has no effective access to essential modern medicines or vaccines. Some 65 percent of people in India and 47 percent of those in Sub-Saharan Africa simply cannot obtain essential drugs when they need them.

Many different barriers exclude people from getting appropriate health care. As noted in the *DCP2* chapter on gender differentials (chapter 10), these barriers can be divided into those related to services, to clients, or to institutions and tend to affect women disproportionately as follows:

- *Service factors* include high costs of care and transportation, distances to services and the time needed to reach them, poor quality care, inappropriate care, negative staff attitudes, and cultural and linguistic differences.
- *Client factors* include social and cultural constraints on women’s mobility and women’s lower incomes and wealth, women’s greater time burdens because of their socially assigned family roles, and women’s limited information about their health needs and rights and about the availability of services.
- *Institutional factors* include men’s control over decision making, health budgets, and facilities; local perceptions of illness; local treatment norms; and stigma and discrimination in health settings.

Although the particulars vary, other *DCP2* chapters delineate a wide range of barriers that constrain access to care for infants, children, sex workers, and a number of other disadvantaged populations.

### Patterns of Inequity in Exposure to Health Risks

Differences in health status are also the result of differential exposure to health risks. Many of these differences are associated with poverty and are discussed in a number of *DCP2* chapters, including those on water and sanitation (chapter 41), neonatal care (chapter 27), malnourishment (chapter 28), and indoor air pollution from stoves (chapter 42). Many risks are associated with risky and physically demanding occupations (chapter 60). Still others are associated with climatic and geographic conditions, which are particularly relevant to malaria (chapter 21), river blindness (chapter 50), helminthic infections (chapter 24), and a wide range of tropical diseases (chapters 22 and 23).

“... 65 percent of people in India and 47 percent ... in Sub-Saharan Africa simply cannot obtain essential drugs ...”

“Many risks are associated with climatic and geographic conditions ... relevant to malaria, river blindness, helminthic infections, and ... tropical diseases.”

## Equity and Technical Progress

“... health inequities have arisen largely from the uneven adoption and implementation of health interventions associated with technical progress...”

How did these inequities in health status, health care services, and exposure to risk arise? Many factors play a role, ranging from accidents of climate or geography to political repression and neglect. Yet despite ample debate about some aspects of the nature and origins of inequities in health, most experts tend to agree that health inequities have arisen largely from the uneven adoption and implementation of health interventions associated with technical progress; that is, they have arisen largely because cost-effective interventions have been applied in some places and not others or for privileged groups and not other groups.

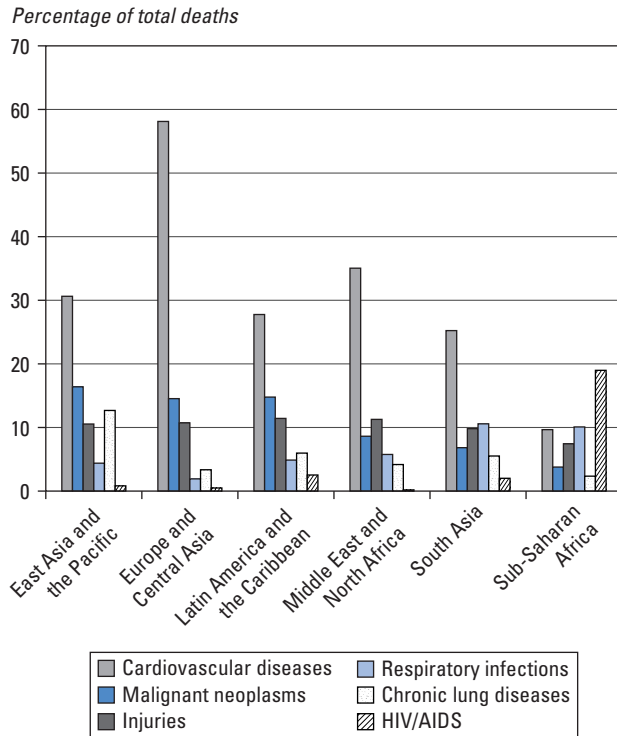
Where the fruits of technical progress have not been available, people have been left behind, with some gaps growing ever deeper. For example, among 12 million childhood deaths analyzed in 1998, close to 4 million resulted from diseases for which effective vaccines are available. Cost-effective and relatively inexpensive interventions for many vaccine-preventable illnesses, diarrhea, pneumonia, TB, and malaria have resulted in a reduction of the disease burden from these diseases to as little as 0.3 percent of the total where such interventions have been applied. Where such interventions are not deployed, these preventable diseases account for 11.7 percent of the disease burden (table 1.2, figure 1.2).

**Table 1.2** Health Expenditures by Country Income Level, Public and Private, 2001

Country Group	Health expenditure per capita (2001 US\$)	Health expenditure (% of GDP)	Public sector expenditures (% of total)
Low-income	23	4.4	26.3
Middle-income	118	6.0	51.1
High-income	2,841	10.8	62.1
<i>(countries in European Monetary Union)</i>	<i>1,856</i>	<i>9.3</i>	<i>73.5</i>
World	500	9.8	59.2

Source: World Bank 2004, Table 2.14.

**Figure 1.2** Major Causes of Death in Persons of All Ages, by World Bank Region



Source: DCP2 2006, chapter 33, figure 33.1.

## AN AGENDA FOR ACTION

The general improvement in world health status is still marred by too many cases of neglect or failure in the application of life-saving public policy actions. What can be done to redress inequities while also sustaining and furthering historic gains in health? *DCP2* tackles this challenge with the latest evidence and cost-effectiveness analysis. It identifies the specific interventions and policy changes that hold the most potential for progress in health. These measures include applying knowledge about cost-effective health interventions in more settings, improving the policies and platforms that support quality health care delivery and reduce barriers to access, generating knowledge in priority areas, and mobilizing additional financial and human resources.

“A large . . . disease burden in low- and middle-income countries is attributable to diseases for which cost-effective interventions are already known . . .”

### Applying Knowledge to Select Interventions Well

*DCP2* presents what we know about which health interventions work for a comprehensive range of diseases, injuries, and disabilities in many different contexts. A large share of the disease burden in low- and middle-income countries is attributable to diseases for which cost-effective interventions are already known and feasible. Selecting the right intervention for a given disease and context matters. *DCP2* demonstrates how decision makers could use cost-effectiveness information along with information on disease prevalence and avertable illness to determine which interventions should be extended and which ones should be questioned. If countries scale up interventions and extend health care services that are cost-effective, the impact on the disease burden could be large.

### Improving Health Systems

Improving health systems and reducing barriers to health care will improve the implementation of health interventions. *DCP2* gives substantial attention to strengthening health systems, because interventions—no matter how carefully selected—are almost impossible to deliver without such systems. As noted in *DCP2* (chapter 3, p. 85), “Cost-effectiveness data reflect largely what can be achieved given a reasonably well-functioning health system. In that sense they can be considered to represent *potential* cost-effectiveness and need to be supplemented with evidence and guidance on how health systems can be strengthened to provide interventions effectively, efficiently, and equitably” (emphasis added).

Systems can be strengthened, coverage can be extended, and equitable distribution can be achieved in a variety of ways, including increasing service infrastructure, reducing costs, improving quality, and establishing transparency in resource allocation. Increasing input from underserved populations is also imperative, because, as discussed in *DCP2* (chapter 3, p. 89), “Strengthening structures of accountability to communities, and introducing mechanisms to ensure that users have a voice in the local health system and can influence priorities, are likely to be important in encouraging good performance.”

### Determining Priorities for Research

The returns from research in health are extremely high, as illustrated by the potential health gains that could be reached by applying the

knowledge available today. Putting resources into research now will permit greater health gains tomorrow, but such resources need to be well targeted. One priority area for research is finding cost-effective interventions for neglected diseases that account for a high burden, particularly among underserved populations. Another essential area of research is on all aspects of the delivery of health care, that is, devising the best and most effective means to get interventions to people who have so far been excluded from its benefits.

Current imbalances in attention to diseases and delivery include the following areas:

- *Drug development.* Of 1,233 new drugs marketed between 1975 and 1999, only 13 were approved specifically for tropical diseases.
- *Research funding.* Even though 85 percent of the global burden of disability and premature mortality occurs in the developing world, less than 4 percent of global research funding is devoted to the communicable, maternal, neonatal, and nutritional disorders that constitute the major burden of disease in developing countries.
- *Underutilization of health services by women.* This has been well documented overall and for specific diseases. For instance, even though women in India report more illness than men, hospital records show that men receive more treatment. Similarly, in Thailand, men are six times more likely to seek clinical treatment for malaria, a disease that affects women and men similarly (*DCP2*, chapter 10).

*DCP2* identifies priority areas for research in epidemiology, interventions, and health care delivery.

### Mobilizing More Resources

*DCP2*'s attention to cost-effectiveness is motivated by the goal of achieving the most value for every dollar spent, but this does not imply that no more dollars are needed. A comprehensive effort to improve health around the world will involve substantial costs.

In most low-income countries, the total resources available for health interventions are grossly insufficient relative to the scale of the disease burden and the need for health interventions. Countries need to finance their own health interventions as much as possible, but for the world's low-income countries, external assistance is already, and will continue to be, an important source of funding. Even though

“One priority area for research is finding cost-effective interventions for neglected diseases that account for a high burden . . .”

“In most low-income countries, the total resources available for health interventions are grossly insufficient . . .”

development assistance has increased in the last decade, including participation by new private foundations and the formation of new global initiatives, more has been promised than delivered and further commitments are still needed.

In middle-income countries, financial resources may be a less binding constraint in absolute terms, but health interventions must still compete with other uses for resources. If existing resources are mis-spent or ineffective, lobbying for more resources for health when public allocation decisions are being made becomes more difficult. *DCP2* can assist in that process by helping the health sector become more effective and efficient.

## PUTTING *DCP2* TO USE

The research, insight, and analysis undertaken in *DCP2* discerns trends in the leading causes of disease and injury over the last decade and has great significance for policy debates on how to respond to and diminish the burden of disease worldwide. Health policy actors and health system decision makers, whether at the level of national health ministries, large regional programs, or smaller programs, will find in *DCP2* up-to-date information on the burden of disease, on cost-effective interventions, and on the interplay of prevention and treatment. Together with their own knowledge about local burdens, resources, and institutional capacities, they will be better able to define priorities and select the best interventions to implement in their context. Others more involved in managing and administering health systems will find current best practice in the delivery of health care, recommendations for innovation, ways to improve quality, and strategies to overcome system constraints. Those primarily concerned with financing health care, whether national finance ministries or those involved in international assistance, will gain an appreciation for the role of health in economic growth and find evidence of the great health effect that is possible when resources are applied well. Researchers will learn of key priorities for their fields, while educators in public health will find a useful teaching tool.

The wealth of information and analysis covered in *DCP2* is structured into three parts (box 1.1). Part One provides perspective, context, and overview. It articulates the volume's main messages and policy implications. Chapter 1, "Investing in Health," provides historical perspectives; argues for investing in health; and highlights some of *DCP2*'s new



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- 48. Illicit Opiate Abuse

### **D. Consequences of Disease and Injury**

- 49. Learning and Development Disabilities
- 50. Loss of Vision and Hearing
- 51. Cost-Effectiveness of Interventions for Musculoskeletal Conditions
- 52. Pain Control for People with Cancer and AIDS

## **Part Three: Strengthening Health Systems**

### **A. Strengthening Public Health Services**

- 53. Surveillance and Response
- 54. Information to Improve Decision-Making in Health
- 55. Drug Resistance
- 56. Community Health and Nutrition Programs
- 57. Contraception
- 58. School-Based Health and Nutrition Programs
- 59. Adolescent Health
- 60. Occupational Health
- 61. Natural Disaster Mitigation and Relief
- 62. Control and Eradication
- 63. Integrated Management of the Sick Child

### **B. Strengthening Personal Health Services**

- 64. General Primary Care
- 65. The District Hospital
- 66. Referral Hospitals
- 67. Surgery
- 68. Emergency Medical Services
- 69. Complementary and Alternative Medicine

### **C. Capacity Strengthening and Management Reform**

- 70. Improving the Quality of Care in Developing Countries
- 71. Workers: Building and Motivating the Workforce
- 72. Ensuring Supplies of Appropriate Drugs and Vaccines
- 73. Strategic Management of Clinical Services

findings, such as the unexpectedly high burden of cardiovascular illness in developing countries and the importance of care during a child's first 28 days of life for reducing infant mortality. Chapter 2, "Intervention Cost-Effectiveness," reviews the set of cost-effective interventions for all diseases discussed in *DCP2* and then identifies "best buys" among these. Coupled with information on local disease prevalence and health system capacity, readers will be able to use this analysis to decide which interventions are most suitable for their own contexts. While selecting interventions is crucial, no intervention will reach its target without good delivery mechanisms. Chapter 3, "Strengthening Health Systems," therefore reviews the evidence on health systems, identifying aspects of best practice and defining key areas for further research and improvement in the delivery and management of health care. Chapter 4, "Priorities for Global Research and Development of Interventions," examines some of the current gaps in knowledge and urgent priorities for further study and progress.

These 4 initial summary chapters are followed by 11 chapters addressing cross-cutting themes, including the Millennium Development Goals (MDGs), women's health, recent public health successes, ethics of resource allocation, and cost-effectiveness methodology, plus a range of financial and economic issues. These chapters provide further demographic and economic context and general discussion that inform all the subsequent chapters on specific diseases, interventions, and modes of delivery.

Part Two of *DCP2* turns to particular diseases, risk factors, and sequelae and the selection of interventions. It is subdivided into four categories, the first of which is "Infectious Disease, Reproductive Health, and Undernutrition." Its 13 chapters include discussions of HIV/AIDS, TB, malaria, diarrhea, tropical diseases, and maternal and neonatal conditions. The second category is "Noncommunicable Disease and Injury," with 12 chapters on cancers, diabetes, psychiatric disorders, cardiovascular disease (CVD), hemoglobinopathies, and intentional and unintentional injuries. The third category, "Risk Factors," provides eight chapters on such topics as air and water pollution, sanitation, obesity, and tobacco and alcohol consumption. The final category, "Consequences of Disease and Injury," offers four chapters that address developmental and sensory disorders, disability and rehabilitation, and pain control.

Finally, part Three of *DCP2* turns to health systems. "Strengthening Public Health Services" is its first category, with 11 chapters addressing

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such topics as family planning, school health programs, adolescent health, and occupational health. The second category, “Strengthening Personal Health Services,” provides six chapters on general primary care, district and referral hospitals, surgery, emergency care, and alternative medicine. The concluding category is “Capacity Strengthening and Management Reform,” with four chapters tackling quality of care, human resources, essential medicines, and management of clinical services.

In addition to its principal volume, the Disease Control Priorities Project has generated a number of related publications. These include the *Global Burden of Disease and Risk Factors* volume (Lopez and others 2006), which updates the 1990 global burden of disease study. In the years that have elapsed since that earlier study, methods for measuring the disease burden have improved, new data sets have become available, and means to analyze existing data sets have been modified and strengthened. The *Global Burden of Disease and Risk Factors* presents these new methods, data sets, and analyses; compiles epidemiological data of deaths and disability for 2001 by age, gender, cause, and region; and includes information on exposure to risk factors.

The Disease Control Priorities Project also generated a review of public health successes that was published as *Millions Saved: Proven Successes in Global Health* (Levine and others 2004), a special issue of the *American Journal of Tropical Medicine and Hygiene* entitled “The Intolerable Burden of Malaria: What’s New, What’s Needed” (Breman, Alilio, and Mills 2004); the Disease Control Priorities Project Working Paper Series and Reprint Series (for a full list, visit the Disease Control Priorities Project Web site at <http://www.fic.nih.gov/dcpp>), and this volume.

## THIS VOLUME

*Priorities in Health* is a companion volume to *DCP2*. It was written to facilitate access to the substantial content of *DCP2*, to synthesize some of *DCP2*'s major themes and findings, and to help readers identify which chapters will be of greatest significance and relevance to them. Via this companion volume, policy makers, practitioners, academics, and the interested public can learn about *DCP2*'s main messages, gain an understanding of its principal methods of analysis, appreciate the scope of diseases and issues covered, and be alerted to chapters of immediate interest. The companion volume will enable access to the

massive amount of information and analysis contained in *DCP2* and facilitate discussion about disease control among colleagues, with constituents, and in the wider community.

The next chapter demonstrates that success is not only possible, but has been realized throughout the developing world. It relates a series of public health successes that have been documented as part of the Disease Control Priorities Project. Chapter 2 demonstrates that despite the high burden of disease in developing countries, success is possible and has been achieved even against great odds, and also that no single recipe for success exists.

Chapter 3 describes the cost-effectiveness methodology employed in *DCP2* and explains its uses, interpretation, and limitations.

Chapters 4 and 5 provide an update on selected diseases, highlighting some of the significant discoveries and sound strategies that emerged from *DCP2*'s comprehensive review of the global disease burden and the range of health interventions currently available. Chapter 4 reviews diseases such as diarrhea, maternal ill health, HIV/AIDS, and malaria, which account for much of the difference in health status between people living in the developing and the industrialized world. By contrast, chapter 5 addresses diseases for which the burden is shared and the challenges to improving health may be similar, as in the cases of CVD, diabetes, tobacco addiction, and neurological disorders.

Chapters 6 and 7 address issues related to implementing interventions and delivering care. Chapter 6 looks specifically at *DCP2*'s findings regarding different levels of health care services and how they relate to one another; particular health service functions, such as surgery and drug supplies, that are important throughout the health care system; and ways that health care services can be integrated around the needs of particular subgroups, such as schoolchildren and adolescents. Chapter 7 then takes a more in-depth look at four dimensions of the health care system that are key to making it effective: generating and using information, managing services to assure good quality, training and deploying qualified health care personnel, and mobilizing and allocating financial resources.

Chapter 8 urges the global community to adopt the strategies and priorities identified in *DCP2* so that progress in health for all can continue.

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