

## Millions Saved: Proven Successes in Global Health\* 2007 Edition

Throughout Latin America, mothers no longer worry about their children contracting polio; vast regions of Africa are now habitable because river blindness is under control; China has made major inroads against tuberculosis; in Sri Lanka, women can give birth without fear of dying—in sharp contrast to women in most poor countries of the world.

In the past 50 years, the developing world has benefited from tremendous improvements in health. Life expectancy has risen from 40 to 65 years. The chances that a child will survive to the age of five have doubled. In addition to directly improving people's lives, this progress contributes to economic growth. While some of the improvement in health is the result of overall social and economic gains, about half of it is due to specific efforts to address major causes of disease and disability, such as providing better and more accessible health services, introducing new medicines and other health technologies, and fostering healthier behaviors.

A working group of experts convened by the Center for Global Development identified 20 cases meeting five criteria (see Box 3) in which large-scale efforts to improve health in developing countries have succeeded—saving millions of lives and preserving the livelihoods and social fabric of entire communities. Taken together, this work provides clear evidence that large-scale success in health is possible—countering a common view that the health problems of the developing world are intractable, and that development assistance to health yields few benefits.

### How Big Is Big?

The programs described in the book are awe-inspiring in their scale and impact. Box 1 provides a brief description of each program; here are some examples:

- Combined with routine childhood immunization, recent vaccination campaigns in seven African nations have almost completely eliminated measles as a cause of childhood death in southern Africa. The number of measles cases dropped from 60,000 in 1996 to 117 in 2000.
- Across 11 countries in West Africa, a regional onchocerciasis control program has prevented 600,000 cases of river blindness and freed 18 million children from the risk of the disease since the program was launched in 1974.
- A national campaign in Egypt increased the awareness and use of oral rehydration therapy, reducing infant deaths due to diarrhea by 82% between 1982 and 1989.

\* Based on the CGD book *Millions Saved: Proven Successes in Global Health*, by Ruth Levine and the What Works Working Group with Molly Kinder. This brief includes updates and information from additional cases. A second edition of *Millions Saved* is available through Jones and Bartlett Publishers at <http://www.jbpub.com/catalog/0763746207>.

- A government-sponsored “100% condom program” in Thailand targeted commercial sex workers to help prevent the spread of HIV/AIDS. The effort led to an 80% reduction in HIV cases among high-risk populations in 2001 compared with 1991, preventing nearly 200,000 new cases.
- In India, more than 300,000 people per year were saved from going blind due to a comprehensive cataract surgery program.

## Learning from Success

These success stories in poor countries provide inspiration and guidance for the path ahead. Seven conclusions emerge from the Center for Global Development’s look at major international public health successes.

### 1. Major health interventions have worked even in the poorest countries

Success is possible even in the world’s most underdeveloped and remote regions, in the face of grinding poverty and weak health systems. The world’s poorest countries, where the average citizen earns far less than US\$1,000 per year, have seen major public health successes. Tens of thousands of poor communities throughout central and east Africa have reduced the prevalence of river blindness through their management of local delivery of the antibiotic ivermectin. In Bangladesh, health workers used house-to-house visits to bring needed health commodities and information to low-income women who, for cultural reasons, could not venture far from home. Throughout sub-Saharan Africa, a campaign to eradicate guinea worm disease overcame the challenge of reaching thousands of remote villages that were outside the national public health infrastructure—and in some instances were not even known to the government—and reduced the disease’s prevalence by 99%.

### 2. Donor funding has saved lives

Many of the cases described in *Millions Saved* succeeded because of help from the international community in the form of grants, development loans, and contributions of expertise and drugs. In Egypt, for example, it was a program funded by the U.S. Agency for International Development and supported by technical expertise from the World Health Organization (WHO) that contributed to the prevention of 300,000 child deaths from dehydrating diarrheal disease between 1982 and 1989. In China, it was a project financed by a World Bank loan and buttressed by WHO guidance that prevented 30,000 cases of TB each year. In Morocco, the donation of antibiotics by

Pfizer has helped reduce the prevalence of blinding trachoma by 75%.

### 3. Saving lives saves money

The costs of successful public health initiatives are dwarfed by the social and economic benefits of eliminating, treating, or controlling the diseases. A tuberculosis program in China treated more than 1.5 million patients over 10 years at a total cost of \$130 million, preventing 30,000 TB-related deaths annually and averaging just \$15–20 for each healthy life-year saved. Each dollar invested in the program generated \$60 in the form of savings on treatment costs and the increased earning power of healthy people. Efforts to control river blindness in sub-Saharan Africa between 1974 and 2002 cost less than \$1 per protected person and prevented 60,000 cases of blindness. As a result of the program’s positive impact on health, an estimated \$3.7 billion will accrue from improved worker and agricultural productivity.

### 4. Partnership is powerful

Achieving large-scale success has often required collaboration among diverse partners. National governments, donors, and private companies have combined their resources through innovative partnerships, and international agencies have broken through institutional and bureaucratic walls to work effectively toward a common purpose. While such collaboration is not always easy, the benefits are evident: Some parties bring funding, others bring technical capabilities in public health, and others generate the political will to sustain the effort in the face of competing priorities. The guinea worm disease eradication campaign benefits from many partners: the Carter Center, the U.S. Centers for Disease Control and Prevention, UNICEF, WHO, the Bill & Melinda Gates Foundation, the World Bank, the U.N. Development Program (UNDP), nongovernmental organizations, more than 14 donor countries, private companies (including DuPont and Precision Fabrics Group, which have donated more than US\$14 million worth of cloth for water filters), and the governments of 20 countries in Asia and Africa. The international effort to control onchocerciasis has relied on the long-term participation of the World Bank, WHO, UNDP, the Food and Agriculture Organization, the governments of 19 African countries, 21 bilateral and multilateral donors, more than 30 nongovernmental development organizations, Merck, and more than 80,000 rural African communities.

### 5. National governments can get the job done

The public sector was integral to the successful delivery of services in most cases—in contrast with the view that governments in

## Box 1: 20 Successes in Global Health

- **Eradicating smallpox.** A massive global effort spearheaded by the World Health Organization eradicated smallpox in 1977 and inspired the creation of the Expanded Program on Immunization, which continues today.
- **Preventing HIV and sexually transmitted infections in Thailand.** In Thailand, the government's "100% condom program" targeting commercial sex workers and other high-risk groups helped prevent the spread of HIV/AIDS relatively early in the course of the epidemic. Thailand had 80% fewer new cases of HIV in 2001 than in 1991 and has prevented nearly 200,000 new cases.
- **Controlling tuberculosis in China.** To address the problem of early dropout from treatment among tuberculosis patients, a national TB program in China implemented a new approach called DOTS—directly observed therapy, short course—in which patients with TB are "watched" daily by a health worker for six months as they take their antibiotics. The program helped reduce TB prevalence by 40% between 1990 and 2000 and dramatically improved the cure rate in half of China's provinces.
- **Reducing child mortality through vitamin A in Nepal.** Capitalizing on the discovery that vitamin A supplementation could save child lives, the government of Nepal began the National Vitamin A Program in 1995 that has since averted nearly 200,000 child deaths.
- **Eliminating polio in the Americas.** Beginning in 1985, in a regional polio elimination effort led by the Pan American Health Organization, almost every young child in the Americas was immunized, eliminating polio as a threat to public health in the Western Hemisphere in 1991.
- **Saving mothers' lives in Sri Lanka.** Despite relatively low national income and health spending, Sri Lanka's commitment to providing a range of "safe motherhood" services has led to a decline in maternal mortality, from 486 to 24 deaths per 100,000 live births over four decades.
- **Controlling onchocerciasis in sub-Saharan Africa.** A multipartner international effort begun in 1974 dramatically reduced the incidence of river blindness and increased the potential for economic development in large areas of rural west, central and southern Africa. Transmission of the parasite has been virtually halted in West Africa, and since the program's inception in 1974, 22 million children in the 11-country area have been free from the threat of contracting river blindness.
- **Preventing infant deaths from diarrheal disease in Egypt.** Using modern communication methods, a national diarrhea control program in Egypt increased the awareness and use of life-saving oral rehydration therapy, helping reduce infant diarrheal deaths by 82% between 1982 and 1987.
- **Improving health in Mexico.** Since 1997, Mexico's PROGRESA program (now known as "Oportunidades") has provided poor rural households with conditional cash grants, resulting in lowered rates of illness and malnutrition and increased school enrollment.
- **Controlling trachoma in Morocco.** Since 1997, the incidence in Morocco of trachoma, the leading preventable cause of blindness worldwide, has been cut by more than 99% among children under age 10 through a combined strategy of surgery, antibiotics, face washing, and environmental controls.
- **Reducing guinea worm disease in Africa and Asia.** A multipartner eradication effort focusing on behavior change reduced the prevalence of guinea worm disease by 99% in 20 endemic African and Asian countries. Since the start of the campaign in 1986, the number of cases has fallen from 3.5 million to less than 11,000 in 2005.
- **Controlling Chagas disease in the southern cone of South America.** Through surveillance, environmental vector control, and house spraying, a regional initiative launched in 1991 decreased the incidence of Chagas disease by 94% in seven countries in the southern cone of Latin America. Disease transmission has been halted in Uruguay, Chile, and large parts of Brazil and Paraguay.
- **Reducing fertility in Bangladesh.** In Bangladesh, strong leadership of the family planning program, a sustained outreach strategy, and a focus on access to services increased the prevalence of contraceptive use from 3% to 54% (with a corresponding decrease in fertility from seven to three children per woman) over three decades, a far greater change than would have been expected on the basis of changes in economic and social conditions alone.
- **Curbing tobacco use in Poland.** Starting in the early 1990s, the transition to a market economy and a more open society paved the way for health advocates to implement strong tobacco controls in Poland, which had the highest rate of tobacco consumption in the world. A combination of health education and stringent tobacco control legislation has prevented 10,000 deaths a year, has led to a 30% reduction in the incidence of lung cancer among men aged 20 to 44, and has helped boost the life expectancy of men by four years.
- **Eliminating measles in southern Africa.** Measles vaccination campaigns in seven African countries have nearly eliminated measles as a cause of childhood death in southern Africa, reducing the number of measles cases from 60,000 in 1996 to just 117 four years later. The number of reported measles deaths fell from 166 to zero.
- **Preventing iodine deficiency disease in China.** The introduction of iodized salt in China in 1995 reduced the incidence of goiter among children, from 20% to 9%, and created a sustainable private system to provide fortified salt.
- **Preventing neural tube defects in Chile.** Through a successful partnership between the flour industry and the national government, Chile began fortifying wheat flour with folic acid in 2002, which has since prevented numerous cases of life-threatening neural tube defects in infants and saved the health system millions of dollars in treatment costs.
- **Preventing dental caries in Jamaica.** Between 1987 and 1995, Jamaica's National Salt Fluoridation Program realized a decrease of as much as 87% in dental caries in schoolchildren. The program has been regarded as a model for micronutrient interventions.
- **Treating cataracts in India.** An intensified cataract surgery program implemented in seven of the most-affected Indian states from 1994-2001, which was catalyzed by technical and operational innovations developed by a non-governmental organization, saved more than 300,000 people per year from a lifetime of blindness through high-volume, low-cost, and high-quality surgery.
- **Preventing Hib disease in Chile and The Gambia.** A national Hib vaccination program in Chile reduced prevalence of Hib disease by 90% in the early 1990s. In 1997, The Gambia introduced Hib vaccines into its national immunization program and has virtually eliminated the disease from the country.

poor countries are uniformly inept at best and corrupt at worst. In the southern cone of Latin America, health ministries collaborated across borders to greatly diminish the threat of Chagas disease. In Sri Lanka, the reduction in maternal mortality was due to a 60-year commitment to the provision of public services. In these instances and others, such as the measles initiative in southern Africa and the condom program in Thailand, most of the money came from domestic government sources rather than foreign donors—another dimension of the public sector's contribution to success.

## 6. Health behaviors can be changed

Success often depends on specific efforts to promote appropriate behaviors, rather than just on the introduction of new drugs and technologies. In some of Africa's most remote and disadvantaged villages, for example, families changed traditional water-handling practices and learned to filter their water to prevent guinea worm disease. In Bangladesh, mothers learned—and now teach their grown daughters—how to mix clean water with a simple salt-and-sugar solution to prevent childhood deaths from dehydrating diarrheal disease. And in Poland, which had the highest cigarette consumption in the world before 1990, smoking rates have plummeted as a result of a combination of taxation, health education, and legal restrictions on tobacco consumption, sales and advertising.

## 7. Successful programs take many forms

Successful “vertical” programs—centrally managed, disease-specific initiatives that are isolated from broader health services—are often the best known. Examples include campaigns to control guinea worm disease and river blindness and to immunize children against specific diseases. But many other approaches have also worked. Successful initiatives include those that strengthen and improve health systems, such as improved delivery of maternal health care in Sri Lanka, and legal and regulatory reforms, such as those aimed at tobacco control in Poland.

In several of the success stories, the boundary between a vertical approach and efforts to strengthen health systems is overcome, showing how disease-specific efforts can work with and strengthen routine health service delivery. For example, the polio eradication campaign in Latin America has strengthened the health infrastructure and surveillance systems and improved the region's ability to detect and control other health threats, such as measles, cholera, and tetanus. In addition, the health planning models developed by the national governments during the polio campaign have strengthened the governments'

management capabilities and have expanded to cover broader mother and child issues. In the effort to control river blindness in central and east Africa, the community-directed model of antibiotic delivery has demonstrated a valuable entry point for expanding primary health care in communities that have little or no access to health care. Similarly, the use of female community health volunteers to distribute vitamin A capsules in Nepal was so successful that the volunteers are now helping to implement deworming, pneumonia treatment, and iron supplementation.

## The World's Desperate Need for Large-Scale Health Success

The need to learn how to succeed is urgent. Long-standing problems remain unsolved, such as the health gap between rich and poor. Newer ones—from the growing toll of cardiovascular disease to the AIDS pandemic—threaten future generations.

Among the challenges are:

- **Inequality.** Higher income has translated into better nutrition, health, and access to health services in much of the world. However, this progress masks an important failure: the gap in mortality, life expectancy, and disease burden between rich and poor countries and between rich and poor children within most countries. Ninety-nine percent of childhood deaths occur in poor countries, and within poor countries child mortality is highest among the poorest. In Indonesia, for example, a child born in a poor household is four times as likely to die by age five than a child born to a family in the richest segment of the population.
- **HIV/AIDS.** The soaring rates of HIV/AIDS have erased decades of steady health improvements in sub-Saharan Africa. An estimated 25 million people are HIV-positive in Africa, and AIDS threatens to take off in India, China, and the former Soviet republics. The death toll in Southern Africa is staggering, and it has contributed to a reversal in life expectancy—now 48 years instead of an estimated 62 years without AIDS.
- **High child mortality.** Child mortality has declined in low- and middle-income countries, but more than 11 million children under age five die each year, 45% of them in sub-Saharan Africa and 33% in South Asia. The rate of improvement in child health has slowed dramatically in the past 20 years in countries where child mortality rates are

## Box 2: Elements of Success in Scaled-up Global Health Programs

- **Predictable, adequate funding from international and local sources. Making public health programs work takes money.** Steady, adequate funding is needed so that the programs can be sustained long enough to have a major impact. Almost all the successful programs managed to obtain long-term commitments of financial support (up to 20 years of funding) at levels that permitted procurement of adequate supplies and commodities and the hiring of good managers and personnel.
- **Political leadership and champions.** Nearly all of the cases illustrate the importance of visible high-level commitment to a cause. In a few of the cases, political commitment was simply the result of a leader's particular interest in a cause. In others, political commitment came about because technical experts were able to communicate effectively that a "big win" was possible. In these instances, the ability of the technical experts to make the most of a political opening was the seed of the success.
- **Technological innovation within an effective delivery system, at a sustainable price.** Many of the cases used a new technology—a drug, vaccine, micronutrient supplement, or pesticide—that was appropriate to the conditions of the developing world. Typically the new technology permitted an existing program to work more effectively and produce rapid health gains. Development of a new health product alone is not sufficient for success, however. Major managerial and logistical efforts were required to ensure that the new technology reached the target population through the existing public health system or through a dedicated distribution network. In many of the cases, the technological innovation led to better health only because of a concerted effort to make it available at a cost that was affordable to developing countries and donor agencies—often through a public-private partnership in which private companies provided the product at reduced prices or for free and the public sector took responsibility for distribution. Such deals have frequently been facilitated through international nongovernmental organizations.
- **Technical consensus about the appropriate biomedical or public health approach.** Agreement within an expert community about the right strategy is a central factor in the appropriate design of programs. Such expert consensus occurs through regular international meetings and investment in scientific research. With such consensus, properly presented, programs are seen as credible and worthy of the outlays required. "Branding" that expert consensus—as the tuberculosis community has done with "DOTS" (directly observed therapy, short course)—helps with advocacy for greater financial and political support.
- **Good management on the ground.** Good health service delivery requires that trained and motivated workers are in place and have the supplies, equipment, transportation and supervision to do their job well. This requires both adequate funding and good management—and in some instances strong management partially compensates for budgetary restrictions.
- **Effective use of information.** Information is important in four ways. First, information about the extent of a health problem raises awareness and focuses political and technical attention on finding solutions. Second, research on health behaviors and on the effectiveness of different service delivery approaches can help shape the design of a program and increase its prospects for success. Third, information motivates. In several programs, program managers were spurred to higher levels of performance through the "positive competition" that comes from the knowledge that other countries or regions are making faster progress. Fourth, information facilitates mid-course corrections. Collecting information before the program begins and along the way has allowed program managers to evaluate whether the intervention is achieving its goals, and in some cases has signaled the need for changes in program strategy.

highest—and yet most of these children die of diseases that can be treated or prevented.

- **Cardiovascular and chronic diseases.** Chronic diseases, and cardiovascular disease in particular, have emerged as a "hidden epidemic" in developing countries. Estimates suggest that conditions such as depression, diabetes, cancer, obesity, respiratory diseases, and cardiovascular disease will grow from about 40% of the health burden in developing countries in 2002 to nearly 75% in 2020. Responding to this impending crisis requires that the major risk factors (high cholesterol and blood pressure, obesity, smoking, and

use of alcohol) be addressed through changes in diet, physical activity, and tobacco consumption.

### What Does the Past Mean for the Future?

The 20 cases share a remarkably consistent list of ingredients—elements that, combined in particular ways, appear to be the main contributing factors to success (see Box 2). The elements of success can serve as a checklist against which to assess whether the Global Fund to Fight AIDS, TB, and Malaria, the Global Alliance for Vaccines and Immunization,

the U.S. President's Emergency Plan for AIDS Relief, and other initiatives are likely to follow a legacy of world-changing achievement. If the full set of common elements is not in place, then policymakers and practitioners have cause for concern and should try to close the gaps identified. Doing so may require new and longer-term funding commitments, greater emphasis on the management and effective use of information, development of technical consensus, and so on—steps that may not be cheap or easy but that are far less costly than the loss of lives and livelihoods that failure would bring.

Each year, about 3 million children in poor countries die of diseases that can be prevented by immunization; another 2 million die of the dehydrating effects of diarrheal disease. About half a million women in the developing world die in pregnancy or childbirth. Tobacco-related illness cuts short the lives of 4 million people in developing countries each year; and cardiovascular disease claims more than 8 million lives. Last year alone, 3 million people in sub-Saharan Africa became infected with HIV. These are the millions of reasons, and millions of chances, to succeed.

## THE CENTER FOR GLOBAL DEVELOPMENT'S WHAT WORKS WORKING GROUP

The What Works Working Group, brought together under the auspices of the Center for Global Development's Global Health Policy Research Network, benefited from the participation of 15 experts in international health, development economics, public policy, and other fields. The Working Group's efforts were supported through a close working relationship with the Disease Control Priorities in Developing Countries Project of the Fogarty International Center at the US National Institutes of Health, which has recruited many of the world's leading authorities to prepare state-of-the-art papers on specific health conditions and dimensions of health systems.

The Working Group established the inclusion criteria for "success" cases and set a high standard for what would constitute adequate evidence about the five criteria:

- **Scale:** Interventions or programs that were implemented on a national, regional or global scale.
- **Importance:** Interventions that addressed a problem of public health significance, measured by the burden of disease.
- **Impact:** Interventions or programs that demonstrated a clear and measurable impact on the health of a population.
- **Duration:** Interventions or programs that functioned "at scale" for at least five consecutive years.
- **Cost-effectiveness:** interventions or programs that used a cost-effective approach, using a threshold of about US \$100 per disability-adjusted life-year saved.

The case write-ups were based on documentary evidence from scientific articles published in peer-reviewed journals and/or rigorous impact evaluations of the programs, as well as interviews with key informants. Each case write-up was reviewed by technical experts knowledgeable about the case.

## ABOUT THE GLOBAL HEALTH POLICY RESEARCH NETWORK

The Global Health Policy Research Network (GHPRN) brings together leading experts in public health, economics and other social science and technical fields to develop original, focused research on high-priority global health policy issues. The GHPRN seeks to improve the outcomes of donor decision-making in global health by:

- Providing a rich evidence-base about policy opportunities and constraints to effective public and private aid in the health sector;
- Bringing new people and perspectives—both multidisciplinary and global—into health policy analysis to increase the robustness of the debate; and
- Supporting the development of innovative solutions to global health financing and other policy problems.

The GHPRN seeks opportunities to contribute analyses about better ways to stimulate and support innovation in products, effective public health practices and delivery strategies; to ensure equitable access over the long-term to key health services; and to better understand how investments in the health sector effects both health conditions and broader economic and social development.

In addition to ‘What Works’, other GHPRN Working Groups have explored:

- How to create incentives for companies to increase investment in research, development, and manufacturing capacity of vaccines for developing countries.
- How to build a comprehensive, credible base of information about financial flows to global health, which is responsive to advocacy, program and policy data needs;
- How to stimulate development agencies to conduct rigorous impact evaluations of major development projects, so that they contribute to global knowledge about what works;
- How to measure a government’s commitment to health;
- How to effectively harness performance-based incentives in health;
- How to increase access to pharmaceutical products through better demand forecasting;

The Center for Global Development leads the GHPRN with support from the Bill & Melinda Gates Foundation. For more information on CGD’s Global Health Policy Research Network, please visit [www.cgdev.org/globalhealth](http://www.cgdev.org/globalhealth).

The **Center for Global Development** is an independent, non-partisan, non-profit think tank dedicated to reducing global poverty and inequality through policy oriented research and active engagement on development issues with the policy community and the public. A principal focus of the Center's work is the policies of the United States and other industrialized countries that affect development prospects in poor countries. The Center's **research** assesses the impact on poor people of globalization and of the policies of governments and multilateral institutions. In collaboration with civil society groups, the Center seeks to identify **policy alternatives** that will promote equitable growth and participatory development in low-income and transitional economies. The Center works with other institutions to improve **public understanding** in industrialized countries of the economic, political, and strategic benefits of promoting improved living standards and governance in developing countries.



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