

GLOBAL HEALTH

STRATEGY OVERVIEW

INTRODUCTION

Private philanthropy has long played an essential role in promoting health in the developing world. Throughout the last century, charities such as the Rockefeller Foundation and the Wellcome Trust have dedicated substantial resources to filling health gaps not addressed by governments and markets. These investments have accelerated research on neglected tropical diseases and delivered essential vaccines and medicines to millions of people.

In this same spirit, Bill and Melinda Gates created the foundation in 2000 in the belief that lasting improvements in health, education, and poverty reduction are achievable. Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. Our Global Health Program supports this mission by harnessing advances in science and technology to save lives in developing countries. We focus on problems that have a major impact on people in the developing world but get too little attention and funding. Where proven tools exist, we support sustainable ways to improve their delivery. Where they don't, we invest in research and development of new interventions, such as vaccines, drugs, and diagnostics. Global health is the foundation's largest grantmaking area, and will continue to be our major focus going forward.

We have grown dramatically over the past decade and recognize that, while our mission has been clear, our specific objectives have evolved and our approaches have not always been well understood. We have resolved to do a better job of communicating our strategies and the values that guide them.

This overview describes the principles, priorities, and future directions of the foundation's Global Health Program. In so doing, we hope to facilitate discussion and debate that will help us improve our ability to contribute to the global effort to save lives.

EVOLUTION OF THE GLOBAL HEALTH PROGRAM

Bill and Melinda often tell the story of how they were first struck by the inequities in global health when they read about rotavirus in a newspaper article. They couldn't believe that something as preventable as severe diarrhea, caused by a disease they had never heard of, was killing hundreds of thousands of children. They went on to read a number of other publications, including the World Bank's 1993 World Development Report, and learned of the tremendous burden of preventable illness and death in developing countries.¹ They were shocked not only by the size of health disparities between rich and poor countries, but also by the fact that these disparities persisted largely because of neglect. Vaccines and other proven, effective solutions existed, but were not being used to save the poorest children. Research to invent new solutions was limited.

Given their background in computer science and information technology, Bill and Melinda believed in the potential for science and technology to improve people's lives. Their first major steps in philanthropy, made in 1999, focused on expanding access to existing vaccines that were severely underused in poor countries, and accelerating research on urgently needed new vaccines. By 2005, the foundation had completed a comprehensive strategic planning exercise for global health, including extensive expert consultations.

OUR PRINCIPLES

Bill and Melinda have given the foundation a clear mandate: to ensure that our investments achieve the highest possible impact, for the greatest number of people, over the longest period of time. This is the essence of why we are here, and this mandate has led to clear principles for the way the Global Health Program approaches its work.

We target a limited number of long-term priorities and solutions. We believe this is the best way to develop deep expertise and partnerships and monitor results and progress rigorously. We recognize that this means we are unable to address many other important health problems. Naturally we will adjust and respond to new evidence and information, but for the time being we are honing our strategies to be more precise than ever before.

Another reason for such intense focus is that the foundation's resources are nowhere near what are needed. As of December 2009, we had made total grant commitments of \$22.61 billion (U.S.), and the share for global health was \$13.05 billion, or 58 percent. Annual global health disbursements, which in 2009 totaled \$1.83 billion, have steadily increased (Table 1). These resources, while significant, represent only a small part of the overall funding picture for global health. Our contributions accounted for about 5 percent of total donor assistance for health in 2007. Other sources, particularly governments, provided far bigger shares. This comparison considers only donor assistance, and not expenditure by developing country governments or private health spending, which further reduces our overall share of health funding.²

We capitalize on the advantages of being a private foundation. Chief among these advantages is the ability to invest in high-risk, high-reward projects that could lead to new breakthroughs, but are perhaps too new or untested for other funders to support. We also have the luxury of investing in long-term strategies, which provides the freedom to think big and accept the fact that we will fail in many instances. As a private foundation, we are also different from government donors or multilateral institutions because we can move more freely between the public and private sectors, and we can be flexible enough to move quickly on new opportunities. After we have a proof of concept—whether a new product or a method by which to deliver an existing one—we are able to advocate for others to help finance those projects that are shown to be worthwhile. For example, we made our first investments in childhood immunization to demonstrate a new model for negotiating bulk purchases of underused vaccines for poor countries.

We have a bias toward funding technology-based solutions. Our ability to invest for the long haul, combined with our belief in the value of technology, means we gravitate toward transformative products and technologies specifically designed to help the poorest of the poor. We believe this technology focus is our best contribution to saving lives as quickly as possible. Our top priority is the development and delivery of vaccines for

infectious diseases because they have been shown to be highly cost-effective health interventions when purchased at a reasonable price. Existing vaccines already save millions of lives every year.³ There is significant opportunity to save and improve millions more lives by making these vaccines more widely available⁴ and speeding the invention of new ones.⁵ That is why we have committed \$10 billion to vaccine research, development, and delivery over the next decade, which is double our commitments of some \$4.5 billion to date, and we are working with others in the global health community to make the next 10 years the Decade of Vaccines.⁶ We expect that roughly half of our Global Health Program investments in this decade will involve vaccines, and although much of the money will support research and development (R&D), a very substantial amount will be invested in delivery.

Table 1
Foundation global health grant commitments and disbursements, 1994–2009

Year	Commitments		Disbursements	
1995	\$	1,750,000	\$	583,000.00
1996	\$	0	\$	583,000.00
1997	\$	2,857,200	\$	1,372,300.00
1998	\$	152,654,193	\$	17,024,945.00
1999	\$	1,189,649,070	\$	371,235,023.00
2000	\$	684,003,193	\$	554,565,995.00
2001	\$	539,880,152	\$	844,967,806.99
2002	\$	519,185,121	\$	501,945,060.00
2003	\$	705,121,222	\$	568,624,253.50
2004	\$	954,622,252	\$	429,652,756.55
2005	\$	1,150,353,866	\$	832,701,353.44
2006	\$	1,771,902,898	\$	893,462,065.78
2007	\$	1,903,161,407	\$	1,221,380,349.41
2008	\$	1,957,646,355	\$	1,818,990,220.49
2009	\$	1,526,149,932	\$	1,833,244,884.96
Total	\$	13,058,936,861	\$	9,890,333,014.12

Grants made prior to the inception of the Bill & Melinda Gates Foundation in 2000 were made through the William H. Gates Foundation.

We consider diverse partnerships essential to our work. We have set ambitious goals that we know we cannot accomplish alone. For this reason, we support multilateral initiatives such as the GAVI Alliance; the Global Fund to Fight AIDS, Tuberculosis, and Malaria (the Global Fund); and the Global Alliance for Improved Nutrition (GAIN)—all of which have proven themselves to be efficient mechanisms to pool money from multiple donors, keep administrative costs low, and conduct ongoing monitoring to ensure that funds are spent effectively. We also support partnerships that link players whose cooperation is vital for advancing health goals, as in the case of product development partnerships like the Malaria Vaccine Initiative, because they can bring together pharmaceutical companies, academic scientists, and research agencies. By working with such global coordinating groups as the Roll Back Malaria Partnership, the Stop TB Partnership, and The Partnership for Maternal, Newborn & Child Health, we can collaborate with a broad community on a specific issue.

As we identify potential partners, we are eager to work with all sectors, including new participants in global health, and all geographies. We support Rotary International’s historic battle against polio efforts, for example, and are excited by the more recent malaria programs of the Lutheran and United Methodist churches.⁷ We have collaborated with the media industry—including the BBC in Europe and American Idol’s *Idol Gives Back* in the United States—and consumer companies, including Orkin Pest Control. Although many of our grants go to organizations headquartered in the United States or Europe, this does not reflect the reach of our funding. In a number of cases, our major partners fund a wide range of smaller partners and organizations in developing countries. This approach helps us make grants quickly and efficiently, while leveraging the expertise, resources, and relationships of leaders in their respective fields. We have opened offices in India, China, and the United Kingdom to be closer to the variety of partners with whom we hope to continue working long into the future.

We strive to complement, not replace, the roles of other players. We must be clear about what we don’t do. Above all, we do not set the global health agenda. We support the goals of the World Health Organization (WHO) and other institutions that are tasked with setting policy. In the same way, we do not try to solve the health problems of individual developing countries, nor displace their health budgets. We invest significant amounts in discovery and product

development, but we do not fund areas where major investments have already been made, and we don’t support scientific inquiry that is not directed to our goals in promoting global health equity.

We are committed to data, evidence, and results. We regularly review investment decisions to ensure that we are using our money as efficiently as possible. Although we have always conceptualized our success in terms of saving lives, we are getting better at working closely with our partners to analyze which products or interventions could lead to the greatest health outcome, and we are rigorously measuring and evaluating success. We have also invested in a number of large-scale monitoring and evaluation efforts that we hope will not only benefit our own decision-making, but will also provide critical information for the field as a whole.

We are passionate about innovation at every level. We invest heavily in the kind of innovation defined as upstream work in basic science that could ultimately lead to breakthrough technologies. But innovation is also about taking those highly complex technologies and developing them into applicable, affordable, and available solutions. Moreover, we believe that innovation in processes, in organization, and in delivery are equally important. This applies to technology-based approaches, such as a vaccine that does not require cold storage, as well as to simpler solutions, such as financial incentives that encourage women in poor settings to give birth in a clinic instead of at home.

We enlist the best minds to help us. Extensive consultation with outside experts and professionals—including current and potential grantees, policymakers, practitioners, and other funders and stakeholders— informs all of our strategic decision-making. Formal mechanisms for soliciting outside counsel include a standing Global Health Program advisory panel, whose members weigh in on the program’s overall strategic decisions.⁸ The panel, which meets twice each year, includes independent global health experts from Africa, Asia, Europe, and North America. In addition, several of our large funding programs, such as Grand Challenges in Global Health, employ formal advisory bodies that review and make recommendations about grant proposals. The vast majority of our individual grants are also externally reviewed. On a more informal basis, many of our program area teams (see Panel 1, page 5) convene advisory meetings and ad hoc working groups to help identify opportunities and pinpoint areas where their investments could have the greatest impact.

OUR STRATEGY

The goal of the Global Health Program is to harness advances in science and technology to address the major causes of illness and death in developing countries. We have chosen to invest in a specific set of diseases and health conditions, and we support the creation and delivery of vaccines, drugs, diagnostics, and other solutions to combat this selected list. We also use advocacy to encourage wise policies, strong political commitment, and sustained, robust contributions from other sources.

Nearly all of our grantmaking can be divided into two main categories—*infectious diseases* and *family health conditions*—that disproportionately affect developing countries.

- ***Infectious diseases***, including enteric and diarrheal diseases, HIV/AIDS, malaria, neglected diseases,⁹ pneumonia, polio, and tuberculosis
- ***Family health***, including the leading causes of illness and death for mothers and newborns during and immediately after childbirth; nutrition, especially during the first two years of life; and family planning

Our starting point in deciding where to focus has been the disease burden in developing countries, as measured by disability-adjusted life years (DALYs) lost. According to estimates by WHO, our priority diseases and health conditions accounted for approximately 40 percent of the total DALYs lost in low- and middle-income countries in 2004, the most recent year for which data are available (Table 2).¹⁰ However, disease burden is not the only criterion we use. We prioritize areas that are being neglected by others, and where there is a clear opportunity for our funding to have an impact. This helps explain why we fund such neglected diseases as African sleeping sickness, and why we don't make grants for other diseases with a relatively high burden in developing countries.

For example, we have chosen not to focus on research in mental health, even though it is a serious health problem in developing countries, in part because of the very large contributions already being made by the U.S. National Institutes of Health, the pharmaceutical industry, and other funders. We will overspend relative to DALYs if we believe there is a unique opportunity to take action right now, and we have made relatively large initial investments, such as in our support for polio eradication. The relatively

Table 2
Burden of disease addressed by the foundation

Disability-adjusted life-years (DALYs) lost, 2004 estimates

	Low-income countries	Middle-income countries	Low- and middle-income countries	High-income countries	Global total
TOTAL DALYs LOST	827,669	572,859	1,400,528	122,092	1,522,620
Diseases and health conditions addressed by the foundation:					
Enteric and diarrheal diseases	59,207	13,107	72,314	438	72,752
HIV/AIDS	42,867	14,977	57,844	628	58,472
Malaria	32,766	1,177	33,943	5	33,948
Maternal/neonatal health and family planning	122,353	40,517	162,870	2,437	165,307
Neglected diseases	15,292	3,464	18,756	47	18,803
Nutrition	26,553	11,362	37,915	775	38,690
Pneumonia	85,837	18,731	104,568	1,328	105,896
Polio and other vaccine-preventable diseases	28,886	3,252	32,138	137	32,275
Tuberculosis	22,356	11,661	34,017	185	34,202
Subtotal, foundation-addressed diseases (% of total DALYs)	436,117 (53%)	118,248 (21%)	554,365 (40%)	5,980 (5%)	560,345 (37%)

Estimates from the World Health Organization.

Panel 1

Global Health Program area of focus strategies

ENTERIC AND DIARRHEAL DISEASES

Program objective: Improve global control of enteric and diarrheal diseases by developing and introducing new prevention and treatment technologies.

Key strategic components:

- Develop and introduce affordable new vaccines for the leading causes of diarrhea in developing countries.
- Improve scientific and public health understanding of diarrhea to guide development of new vaccines and treatment options.
- Advocate for greater political attention and resources to fight diarrhea and help coordinate diarrhea efforts with those in nutrition, clean water, and sanitation.

FAMILY PLANNING

Program objective: Improve women's health, prevent unintended pregnancies, and reduce maternal and neonatal mortality by expanding access to high-quality, voluntary contraception and other family planning services.

Key strategic components:

- Advocate for more and better resources to address the unmet family-planning needs of women in the developing world.
- Demonstrate the impact of model programs to increase contraceptive use in poor urban areas of developing countries.
- Develop new or improved contraceptive methods for both women and men.

HIV/AIDS

Program objective: Reduce the global burden of HIV by accelerating the development new prevention technologies and by demonstrating the most effective and efficient models for delivering HIV prevention and treatment in developing countries.

Key strategic components:

- Promote greater innovation in HIV vaccine research and development.
- Make targeted investments to facilitate the development and delivery of antiretroviral-based prevention technologies and voluntary male circumcision for HIV prevention.
- Use data and analysis to identify ways to optimize HIV treatment delivery and ensure that prevention programs have maximum impact among populations at highest risk.

MALARIA

Program objective: Over the short term, maximize and sustain the impact of existing malaria control tools and strategies; over the long term, develop and introduce new technologies needed to achieve malaria eradication.

Key strategic components:

- Discover and test malaria vaccines, other new prevention technologies, and combinations of interventions, including more effective and affordable malaria treatments.
- Develop models and other evidence for achieving large-scale malaria control and elimination with existing tools and new technologies as they become available.
- Advocate for full implementation of the Roll Back Malaria partnership's Global Malaria Action Plan, including adequate commitment and financing for research and development.¹

MATERNAL, NEONATAL, AND CHILD HEALTH

Program objective: Reduce the number of mothers and infants who die during and immediately after birth by increasing the coverage of effective intervention packages, including developing and introducing easy-to-use tools to address the major causes of maternal and newborn deaths.

Key strategic components:

- Develop and field-test new tools to manage the major causes of maternal and newborn deaths, including tools that can be used by families at home and by health workers with limited formal training teamed up with midwives and connected to first-level clinics.
- Gain a better scientific understanding of causes and means to prevent maternal, fetal, and newborn deaths.
- Stimulate demand for services and promote quality maternal and newborn practices among families; focus on creating high-quality interactions with frontline workers.
- Advocate for greater political support and funding to address maternal, newborn, and child health issues.

NEGLECTED AND OTHER INFECTIOUS DISEASES

Program objective: Reduce the burden of neglected diseases through effective control, elimination, or eradication.

Key strategic components:

- Develop and introduce new vaccines, other prevention tools and strategies, screening methods, and treatments for neglected diseases.
- Develop and introduce integrated strategies for addressing multiple neglected diseases.
- Advocate for continued attention and resources to fight neglected diseases.

NUTRITION

Program objective: Reduce undernutrition in children under age two and micronutrient deficiencies by developing and introducing foods fortified with essential nutrients, improving child feeding practices, and addressing key knowledge gaps.

Key strategic components:

- Support public-private partnerships to expand the availability of staple foods enriched with key micronutrients and biofortified foods.
- Develop and demonstrate effective approaches for promoting proper infant feeding practices, most notably breastfeeding, and for addressing the causes of low birthweight.
- Advocate for greater resources for effective nutrition programs and help coordinate nutrition work with other health and development priorities.

PNEUMONIA

Program objective: Reduce the global burden of pneumonia by developing and introducing vaccines for major causes of the disease.

Key strategic components:

- Develop and introduce new pneumonia vaccines that are effective and affordable for developing countries.
- Improve scientific understanding of pneumonia to guide research on new vaccines and treatment options.
- Advocate for greater political attention and resources to fight pneumonia and encourage private industry to research and develop new vaccines.

POLIO

Program objective: Support the polio eradication milestones and strategies set by the Global Polio Eradication Initiative.

Key strategic components:

- Support polio vaccination campaigns in countries that remain at risk and in response to outbreaks.
- Develop and introduce innovative polio tools and strategies, including more accurate and timely measurement of population immunity, antiviral drugs, and new vaccines.

- Advocate for full implementation of the Global Polio Eradication Initiative's strategic plan.²

TUBERCULOSIS

Program objective: Improve global tuberculosis (TB) control by developing and introducing new technologies to prevent, diagnose, and treat the disease.

Key strategic components:

- Discover and clinically test new TB vaccines, more effective and faster-acting treatments, and more accurate diagnostics.
- Ensure high, rapid, and equitable uptake of TB innovations to sustainably improve TB control.
- Mobilize resources and political support for TB R&D, maximize commitments to TB control, and enable political support for uptake of TB innovations in high-burden countries, especially emerging economies.

GLOBAL HEALTH DISCOVERY

Program objective: Encourage highly innovative research that could lead to transformative breakthroughs in preventing, diagnosing, and treating diseases that disproportionately affect developing countries.

Key strategic components:

- Identify novel disease targets to guide vaccine and drug development, and discover new platform technologies for creating low-cost, easy-to-use health tools for developing countries.
- Apply unconventional and multi-disciplinary insights to persistent scientific challenges in global health.
- Identify and harness new technologies to increase the speed with which vaccines and other health solutions can be successfully developed, tested, and implemented.

GLOBAL HEALTH DELIVERY

Program objective: Overcome bottlenecks in the delivery of vaccines and other health solutions, such as drugs and diagnostic tests, to people in developing countries.

Key strategic components:

- Ensure that funding, programs, and policies are in place to introduce vaccines to prevent pneumonia and severe diarrhea.
- Work with the Global Polio Eradication Initiative to eliminate polio as a threat to human health.
- Support the Government of India and selected state governments in their efforts to improve maternal and child health.

GLOBAL HEALTH POLICY AND ADVOCACY

Program objective: Strengthen overall political commitment, financial resources, and public policies for global health.

Key strategic components:

- Encourage donor governments to maintain robust global health funding commitments, and encourage developing countries to invest more of their own resources in health.
- Create innovative partnerships to finance global health, and encourage greater involvement by private industry.
- Collect and analyze data on global health needs, funding levels, and impact; increase awareness and understanding of the results being achieved by global health investments.

¹ Roll Back Malaria. *The Global Malaria Action Plan* (2008). <http://www.rollbackmalaria.org/gmap/gmap.pdf>.

² Global Polio Eradication Initiative. *Framework for Program of Work 2010–2012* (2009). <http://www.polioeradication.org>.

³ Stop TB Partnership. *The Global Plan to Stop TB: 2006–2015* (2006).

small disease burden of polio reflects the enormous success of eradication efforts to date, and we believe there is a unique opportunity to support the final push for global eradication of this disease.

On rare occasions we invest outside of our core priorities. In 2008, we announced an investment in tobacco control to prevent the onset of a tobacco-use epidemic in Africa and Asia. We work in partnership with the Bloomberg Initiative to Reduce Tobacco Use, a leader in tobacco control, targeting cessation in the 15 low- and middle-income countries with the highest burden. We have also made initial investments in prevention strategies in countries that are at the tipping point of burgeoning tobacco prevalence, with an emphasis on Sub-Saharan Africa.

Panel 1 summarizes our 13 program areas. Each program area has a clear strategy that defines the types of activities we will consider investing in, and our rationale for doing so.¹¹ There are 10 program areas related to specific diseases and conditions—including our commitment to polio eradication, which we also identify as a separate technical focus within the delivery team—and three cross-cutting strategy areas: discovery, delivery, and policy and advocacy.

Each specific strategy defines a set of desired health improvements relative to the current burden of the disease or condition, and a critical path of investments needed to achieve those goals. The strategies identify both existing technology-based interventions that could have a significant impact if they were made more widely accessible, and new interventions that could further help if they were created and introduced. The strategies also specify partnerships we need to achieve these goals, any obstacles that are expected along the way, potential solutions to those obstacles, and the advocacy activities needed to ensure that policies and sufficient external resources are in place.

The three cross-cutting strategies represent areas where targeted investments could benefit multiple priority areas simultaneously. Our discovery team funds the identification of novel targets and platform technologies for application in disease intervention. The delivery team focuses primarily on childhood immunization, reflecting our prioritization of vaccines. Our policy and advocacy team encourages donors, developing countries, and the private sector to increase their commitment, resources, and policies for improving health.

The program area strategies were designed to integrate with each other, and as a result, they overlap in a number of places. The nutrition and diarrhea strategies are closely linked, and are also coordinated with the foundation's Global Development Program efforts in water, sanitation,

and agriculture. Under the framework of family health, our strategies for maternal, newborn, and child health; family planning; nutrition; and others link with each other and with the delivery of childhood vaccines.

PRIMARY AREAS OF WORK

We fund four major work streams that run through the priority diseases and conditions described above: discovering new health solutions; developing effective vaccines, drugs, and diagnostics; delivering existing interventions; and advocating for supportive global health policies and resources.

Discovery: Many of the diseases and conditions on which we work require effective, affordable new interventions. We urgently need vaccines for HIV/AIDS and malaria; and more effective, comprehensive, and affordable vaccines to combat TB, diarrheal diseases, pneumonia, and certain other neglected diseases. New technologies could also greatly improve efforts in maternal and newborn health, family planning, and nutrition. Our discovery team carefully assesses investment opportunities for their potential to give rise to new preventive, therapeutic, or diagnostic solutions; to provide new platform technologies or tools by which to help develop and evaluate such solutions; or to fill key knowledge gaps that stand in the way of doing so. All of our discovery investments are driven by the need to develop and apply solutions that can be deployed, accepted, and sustained in the developing world.

We do our work through a variety of mechanisms. These include focused investments in specific products, like our recent request for proposals on point-of-care diagnostics platforms, staged investments to identify high-risk but transformative approaches to solutions, and the creation of toolkits and knowledge to help us identify new product leads, such as new TB medicines. Our work builds on the investments of others in the fundamental sciences. We use research innovations from different fields to accelerate progress, and we seek ideas and solutions from creative minds across the globe and from diverse fields. We recognize that our discovery budget is a small fraction of the overall global investment in health-related discovery research, and so aspire to complement and catalyze others rather than compete.

Development: In developed-world markets, pharmaceutical companies traditionally play the role of translating basic research into registered products. In global health, however, there often are not adequate incentives for private firms to assume this role, and so product development is a major focus area for us. Our support spans

the spectrum of product development activities, including preclinical and clinical research, pilot manufacturing, and application for regulatory approvals.

One approach we favor is to work with product development partnerships (PDPs). These are not-for-profit organizations that bring together the expertise and resources of public, academic, and for-profit sectors to develop, test, and bring to licensure new health technologies.¹² We believe that PDPs, which manage a portfolio of candidates to diagnose, prevent, or treat neglected diseases, have the potential to catalyze development of new products. With support from us and other critical funders, many of whom are governments, PDPs select and advance the most promising technologies available worldwide. They can also apply lessons learned from other candidates within their portfolios to accelerate development. We fund 17 PDPs, such as the Global Alliance for Tuberculosis Drug Development and the International Partnership for Microbicides, and, as of 2009, have invested more than \$1.9 billion in them. Although we strongly support this model, we will invest in promising development work in our priority areas wherever it can be found, including universities and research institutes in both developed and developing countries.

The ultimate objective of the scientific research and product development we support is to create health interventions that are accessible and affordable and will be used. We encourage grantees to think in terms of market demand by supporting them to develop target product profiles and to consult with potential buyers or consumers of a product to test the proposed features. More importantly, while investigators and product development companies are typically allowed to retain intellectual property rights to any knowledge, technologies, or products they invent with our funding, they are obligated under the terms of their grant agreements to use their rights in a way that facilitates access to these technologies by the people who need them most.

Delivery: Where effective and practical technology-based solutions exist, we support efforts to deliver them to people in greatest need. Our investments in delivery often take one of two forms.

- We primarily invest in partnerships that introduce underused or new vaccines and other health solutions. Some of our largest funding to date includes grants to facilitate the delivery of vaccines for hepatitis B, *Haemophilus influenzae* type B, pneumococcus, rotavirus, and other infectious diseases; help introduce staple foods fortified with essential micronutrients; and expand access to tools for averting illness and death related to childbirth.

- At the same time, we have also made limited investments in country-level programs as demonstration projects to examine the potential impact of scaling up the delivery of existing health solutions, with the aim of disseminating results and best practices. For example, we have invested in projects for HIV prevention in India and HIV treatment in Botswana, in malaria control in Zambia, and in a program in China to demonstrate the impact of recently developed TB diagnostics and other tools.

Unlike bilateral donors, we do not as a general rule make direct investments in healthcare infrastructure, such as clinics or laboratories, or take on recurring costs within health systems, such as the training and salaries of healthcare personnel. Although these capacities are absolutely essential to ensure the delivery of quality health services, the ongoing operating costs of health systems in poor countries far exceed the ability of our resources to sustain them. We also believe that the principal responsibility for the maintenance of health systems rests with national governments and bilateral donors. We do not make many direct investments in health-system infrastructure, but many of our largest grants do have an impact here. For example, investments in vaccine and drug delivery have supported the training of health workers, and helped strengthen procurement and distribution systems for vaccines and medicines.

We have provided grants that support the development and implementation of policies in malaria control and tobacco cessation. Our investment in the Health Metrics Network has helped to set a framework for enabling health information systems. We have also provided grants directed at supporting the work of health ministers and academic scientists.

Advocacy: The essence of our advocacy work is twofold: to inspire sustained public and private financial commitments to global health and encourage the policies needed to create a more conducive environment for investment and for product development and delivery. These advocacy efforts include gathering data and information on health needs, increasing awareness of effective solutions, and disseminating evidence on the progress and impact of global health investments.

We have also helped create innovative financing mechanisms that increase the stability and predictability of financing, which allows health policymakers to engage in long-term planning. Examples include the International Finance Facility for Immunization, which uses the bond markets to raise capital for children's vaccines, and the Advance Market Commitment for pneumococcal vaccines,

which allows vaccine companies to recoup some of the costs of investment in developing and manufacturing new vaccines that target diseases primarily found in poorer countries. These provide incentives to companies to continue this important work.

In some cases, our advocacy work is tied to specific diseases. In other cases, advocacy investments address a broader set of global health needs. We support the Kaiser Family Foundation, for example, in compiling non-partisan global health information for policymakers. We also work to expand our collaborations, especially within the private sector, which is a crucial partner in bringing new ideas to market. We are working closely with pharmaceutical and biotechnology companies to identify viable business models for investing in global health discovery, development, and delivery.

We engage in advocacy activities directly as well. Bill and Melinda meet regularly with leaders in health and development, government, and business, and have delivered major speeches on global health priorities, including HIV prevention¹³ and malaria control and eradication.¹⁴ In October 2009, they delivered a major presentation in Washington, D.C., called the Living Proof Project, which demonstrated the positive impact of U.S. government investments in global health.¹⁵ In January 2010, at the World Economic Forum in Davos, they called for making the next 10 years the Decade of Vaccines, and in March 2010, Bill testified before the U.S. Senate Foreign Relations Committee on the importance of the Obama administration's Global Health Initiative.

OUR GRANTMAKING

We employ several approaches to identify and shape grants. Some grant applications come to us through unsolicited letters of inquiry, which we may accept as long as they are consistent with our strategies. As part of our evolution to more strategic grantmaking, we increasingly issue requests for proposals to address specific needs, and in selected cases we proactively approach potential grantees to submit proposals.¹⁶ Our goal is to ensure that we are considering the widest range of funding opportunities and hearing diverse perspectives on the relative merit of those opportunities.

The review process for all large grants involves input from a broad cross-section of outside experts, other funders, and other stakeholders. The vast majority of our grants, even many of the smallest, are shared with experts in an external review.

On the other hand, we do at times take a more streamlined approach to capitalize quickly on emerging opportunities

or to encourage applications from outside the mainstream of global health. The clearest example is Grand Challenges Explorations, which seeks out creative new research that could lead to future breakthroughs. Applicants submit two-page proposals for initial seed funding of \$100,000; funding decisions are made by an international, multidisciplinary pool of scientists. Each member of a panel of reviewers, consisting of internationally recognized scientific innovators, designates one proposal that will be assured funding, provided that legal and institutional requirements are met. Each votes for additional options as well. By sidestepping the standard peer-review process, we are finding it much easier to tap and even provoke ideas from younger investigators, from scientists in developing countries, and from researchers not currently focusing on global health. More than 340 grants have been awarded through this initiative.¹⁷

Table 3 shows the allocation of our global health grants through 2009 across all program areas.

Table 3

Gates Foundation grant commitments by global health program area

Disease-specific Program Area	US \$	% of total
HIV	\$ 2,200,275,199	17%
Malaria	\$ 1,660,326,554	13%
Neglected Diseases	\$ 986,052,620	7%
Tuberculosis	\$ 886,991,353	7%
Diarrheal and Enteric Diseases	\$ 374,108,686	3%
Pneumonia	\$ 474,450,398	4%
Maternal, Neonatal, & Child Health	\$ 830,793,255	6%
Family Planning	\$ 561,438,286	4%
Nutrition	\$ 377,710,368	3%
Tobacco	\$ 95,743,839	1%
Advocacy	\$ 1,195,824,574	9%
Delivery	\$ 1,863,483,538	14%
Polio	\$ 815,622,746	6%
Discovery	\$ 490,258,201	4%
Special Initiatives	\$ 303,029,362	2%
TOTAL	\$ 13,058,936,861	100%

Includes total grant commitments from 1994 through 2009.

PROGRESS, RESULTS, AND LESSONS LEARNED

Many of our global health grants are long-term investments, and insufficient time has elapsed to permit a full assessment of their results and impact. That said, there have been many examples of progress, as well as of setbacks and lessons learned.

Some of the most encouraging signs of progress have been achieved by multilateral partnerships to deliver health solutions. In its first 10 years, the GAVI Alliance has helped provide life-saving vaccines to more than 250 million children, and WHO estimates that these efforts have prevented approximately 5 million premature deaths.¹⁸ As of 2009, GAIN had reached more than 200 million people in 26 countries with fortified foods and other nutrition programs. As an example of impact, neural tube defects fell by 30 percent in South Africa after folic acid was added to maize meal and wheat flour nationally—the first time such a decrease has been observed in a predominantly African population.¹⁹ Through the end of 2009, programs supported by the Global Fund had helped deliver antiretroviral treatment for HIV to an estimated 2.5 million people, tuberculosis treatment to 6 million people, and 104 million insecticide-treated bed nets to prevent malaria. Overall, interventions delivered by the Global Fund are estimated to have averted 4.9 million deaths that would have been caused by these three diseases.²⁰

It is critical to note that in all of the examples above—GAVI, GAIN, and the Global Fund—the foundation is just one of many funders. The achievements of these partnerships are shared successes.

Our partners in the field of maternal, newborn, and child health are observing exciting examples where simple interventions appear to make a significant difference in the health and survival of newborns. We are therefore investing in several large trials now underway to test the impact of such interventions as simplified antibiotic regimens, emollient therapy with materials like sunflower seed oil used for cooking, and chlorhexidine umbilical cord cleansing to prevent and treat newborn infections. We are also investigating the causes of serious newborn infections and conducting a landscape analysis to identify potential new technological innovations to address the major causes of maternal and newborn deaths.

On the product development front, the foundation is currently supporting the development of 68 new candidate vaccines, drugs, diagnostics, and other health technologies—this includes products in preclinical development through prelaunch phase (Table 4). Among

these is a new inexpensive vaccine to fight cholera in Africa and an inexpensive vaccine for meningococcal meningitis, which is scheduled to be introduced in Africa in 2010. A vaccine against Japanese encephalitis has already been launched. Our investments in early-stage discovery research have also shown progress. One compelling area is the control of mosquitoes that carry diseases such as malaria or dengue. Scientists are now testing compounds that can disrupt a mosquito's sense of smell, making it harder to find humans to bite.²¹

At the same time, there are a number of cases in which our progress has been slower than hoped. Bill and Melinda did not expect that, a decade after learning about rotavirus, a cheap, effective rotavirus vaccine would still not be available to all children in developing countries. In R&D, the TB vaccine candidates we have supported have not progressed as rapidly as anticipated. The same is true for an affordable drug to cure visceral leishmaniasis, a potentially fatal parasitic disease transmitted by the bite of a sand fly.

At a more strategic level, Global Health Program progress has been slower than expected in some areas—notably maternal, newborn, and child health and family planning. Our grantmaking in these areas has only recently ramped up, as we took longer than anticipated to define strategies that capitalize on our unique features as a donor. These cases highlight the tradeoffs in finding the right balance

Table 4
Gates Foundation grant commitments by program area

Disease/Technology	Candidates in development
HIV vaccines	6
Other HIV preventives	5
Malaria vaccines	6
Malaria therapeutics	5
Tuberculosis vaccines	5
TB therapeutics	3
Pneumonia vaccines	8
Diarrhea vaccines	7
Neglected Disease vaccines	6
Neglected Disease therapeutics	6
Diagnostics	11

between creating an effective, detailed strategy and making a rapid impact. We want to be sure that our investments are complementary to what others in the field are doing.

There have also been outright setbacks. We have faced disappointing results from initial investments in clinical trials of new HIV prevention methods, including topical microbicides and suppressive treatment for genital herpes infection.²² We have also encountered methodological and operational challenges with trials of pre-exposure prophylaxis for HIV.²³ Of course, scientific setbacks are common in medical research, and we believe strongly in the importance of learning from negative research results. Given that our strategies often involve support for high-risk activities, we expect that many of the projects we fund will not succeed, and we continually look for ways to refine our approaches over time. For example, as HIV prevention research has progressed, we have gained a better understanding of key challenges related to the design and conduct of clinical trials, and provided a grant to the Institute of Medicine to conduct a comprehensive review to inform future efforts.²⁴

One of the fundamental challenges to our long-term approach is that we must make predictions and assumptions that can turn out to be false. We supported the licensure and distribution of a monovalent oral polio vaccine type 1, only to see type 3 virus spread. In making the original decision, our objective was to help eradicate polio one serotype at a time, and we did not adequately factor in the risk that type 3 poliovirus, given lower population immunity, could cause large epidemics. We are now supporting a bivalent vaccine that prevents against types 1 and 3. In other cases, we have made correct assumptions, but have not achieved the optimal balance among them. In nutrition, the majority of our early investments focused on population-level interventions, yet data suggest that targeting pregnant women and children in the first 24 months of life would have a greater impact on reducing nutrition-related death and disability.

We also recognize that we made some novice mistakes back when we were a small team, learning as we went along. In hindsight, not all of our early investments were made on the basis of fully formed strategies as they now are. Many of the delivery and product development partnerships we helped create could have benefited from earlier attention to mechanisms for accountability and impact assessment, as well as project management and fundraising skills—these are observations that the partnerships themselves have made. In our discovery work, many of our first investments focused on broad scientific and technological goals that had been defined by an international call

for ideas. The fundamental goals remain relevant and challenging, but we have learned that we also need to define aspirational product profiles and design a path through clinical development. Our development work focused on the products, and we didn't take sufficient stock of what needs to be in place to create demand—better policy and regulations, or smarter incentives or pricing—and to make those investments ultimately successful. In our advocacy work, we built strong relationships with a number of partners at the outset, yet did not focus sufficient attention on ensuring that organizations work collaboratively, and avoid duplication of effort.

Although monitoring and evaluation components have been built into most grants, they have sometimes been less rigorous than needed. For example, initial evaluations of the Avahan HIV prevention initiative in India show significant increases in the availability and uptake of critical prevention services. However, our ability to draw causal conclusions about impact on HIV incidence is limited because full baseline data were not collected, and we are now undertaking additional evaluation activities to fill these gaps.²⁵ In all of our efforts broadly, there is a growing need for policy analysis based on specific evidence, especially given that the global economic downturn is forcing everyone to make tough choices about funding priorities.

Above all, we recognize that we have often neglected to keep our partners fully informed as we made our strategic choices. This is a key lesson learned from a comprehensive grantee survey undertaken last year with the Center for Effective Philanthropy. We need to be more transparent about what it is that we have chosen to take on, and why. We must also be clear about what we do not do, to avoid unrealistic expectations. Only by sharing our strategies and the logic behind them can we ensure that we will find the best partners to help us help the people we serve, and to that end we have posted all of our strategies on our website. We are committed to capturing the best opinions in the field through ongoing dialogue with experts, and we strive to be better listeners. We are also committed to greater disclosure of our funded activities. We are recoding our database of global health grants, and by the end of this year will be the first private foundation to report our giving according to the established international standards used by donor governments.

FUTURE DIRECTIONS

In the coming years, we expect to continue to invest deeply in our priorities. At the same time, we fully expect that our strategies will evolve in response to new opportunities, challenges, and lessons learned. One of the biggest trends

that will shape our strategy is the slowing growth in our annual grantmaking. The previous 10 years have been largely a ramp-up period, and total grant commitments increased significantly from year to year (Table 1, page 2). A more stable level of grantmaking from year to year will require us to make even more careful and targeted choices, especially because our multiyear grants will place significant constraints on the amount of unallocated funding available in a given year. This will lead us to move away from being primarily an organization focused on making new grants to one focused on delivering results through grants we have made.

Together with our partners, we will also face important decisions prompted by the maturing R&D pipeline. Many of the product development partnerships we support have so far conducted mainly preclinical and early clinical research, activities that are relatively inexpensive compared to the large-scale clinical trials ultimately required to bring effective products to licensure. We will need to work closely with industry and the scientific community, as well as other funders, to make the best decisions about which new vaccines, medicines, and other health technologies are sufficiently promising to warrant far more costly large-scale testing. In many cases, a key challenge is the lack of reliable models for predicting the efficacy of new interventions in the absence of an end-stage clinical trial, which takes a great deal of time and money. We are making investments to seek innovative ways around this problem, such as the validation of secondary biomarkers that correlate with health outcomes.

As new vaccines and other health technologies emerge successfully from the R&D process, we and the rest of the global health community will face major challenges in ensuring that they are delivered to people in need. The GAVI Alliance, for example, has already faced difficult decisions about relative priorities and funding as it prepares to support introduction of newly available rotavirus and pneumococcal vaccines. By the same token, there is the very real risk that many of the products currently in development could prove not to be effective. Should this happen, there will be a particular urgency to have a ready pipeline of alternative concepts to move forward. This is the reasoning behind our search for innovative breakthroughs, such as might result from our investments in the Collaboration for AIDS Vaccine Discovery, and the Grand Challenges in Global Health and Grand Challenges Explorations programs.

It will soon be possible to measure and evaluate more definitively the progress and results of many of our most significant global health investments. We are committed to supporting these efforts and acting on the lessons as they

become clear. We regularly encourage grantees to publish peer-reviewed assessments of their programs, and often allow grantees to use foundation funding to cover the costs of disseminating results. Our country-level demonstration projects, such as the Avahan HIV prevention initiative in India, have significant built-in evaluation components. We have also invested in independent health monitoring and evaluation, including support for the Institute for Health Metrics and Evaluation at the University of Washington and the International Initiative for Impact Evaluation. These investments are intended to help improve the overall quality of health information available to decision-makers, including data on spending inputs and outputs, morbidity, and life expectancy, and the attributable effectiveness of individual health interventions and programs. We also fund the Disease Control Priorities Network, which carries out the research and analytics needed to promote evidence-based decision-making in developing countries and build the skills capacity necessary for effectively assessing policy choices. Internally, we are building up a strategy team that will measure and evaluate the impact of our grants and partnerships, in order to provide the evidence and analysis needed to help us with the tradeoffs that we will inevitably need to make.

CONCLUSION

We believe that our generation will be judged by how we handle the crisis of global health. It is a wonderful achievement that the number of children needlessly dying from preventable causes has been cut in half since 1960, to less than nine million. Yet that is still nine million children too many.

We've grown as a foundation, and so has the complexity of what we are doing. We recognize that it takes time to effect positive change, and readily admit that while some things we've tried have worked, others have not. We understand the irreplaceable value of partnership, and will make sure that we continue to seek external counsel and remain open to new ideas.

All of us in the global health community must work together to set ambitious goals, and work with urgency to create and deliver the vaccines, drugs, and other interventions that will save lives. That will be the one true measure of our success.

TO LEARN MORE

About the Global Health Program:
www.gatesfoundation.org/global-health

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Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Based in Seattle, Washington, the foundation is led by CEO Jeff Raikes and Co-chair William H. Gates Sr., under the direction of Bill and Melinda Gates and Warren Buffett.

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