The U.S. Role in Global Polio Eradication

Author
Nellie Bristol

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Cover photo: HHS Secretary Sebelius administers polio vaccine to a child in New Delhi, India; photo from U.S. Department of Health & Human Services, http://www.hhs.gov/secretary/about/photovideo/travel_to_india.html.
Global eradication of poliomyelitis is inevitable; the only question is whether we will accomplish it or pass on the needed action to our successors. We believe we should act now to leave the legacy of a poliomyelitis-free world for our children.—The Case for Global Eradication of Poliomyelitis

99 Percent Reduction in Polio

Between 1988 and December 12, 2012, annual worldwide cases of polio plummeted from 350,000 to 213—a reduction of more than 99 percent. This public health success was championed by the World Health Organization-led Global Polio Eradication Initiative (GPEI)—which itself owes a fundamental debt to U.S. leadership, technical expertise, and resources.

The United States has been instrumental to the global polio eradication effort, from the influential American public health and philanthropic leaders who first pushed the initiative forward to the contributions of nongovernmental partners such as Chicago-based Rotary International and the Bill & Melinda Gates Foundation. The U.S. government and American organizations have provided more than $4 billion of the total $9 billion dedicated to the initiative so far. Rotary, Gates, the U.S. Centers for Disease Control and Prevention (CDC), and the U.S. Agency for International Development (USAID) have purchased vaccines, trained personnel, and contributed leaders to the program. They have provided essential technical and operational research, helped develop groundbreaking viral detection and tracking methods, and pioneered processes for identifying and vaccinating hard to reach children. On a more macro level, U.S. leaders have been staunch advocates for polio eradication at the highest levels, including at the United Nations and the G-8.

“The big picture—it could never have been done without the U.S.,” said Bruce Aylward, assistant director-general for polio, emergencies and country collaboration at the World Health Organization.

1 Nellie Bristol is a research fellow with the Global Health Policy Center at CSIS.
(WHO). “[The United States] has played such a core, central leadership role in this, a multifaceted role.”4

But the program, and therefore a significant U.S. investment, is now at a critical juncture. Despite remarkable strides against the paralyzing disease, the initiative has yet to reach its ultimate goal. The original target date of 2000 for eradication is now pegged to the end of 2012—a deadline certain to be missed. Pockets of poliovirus remain in Nigeria, Afghanistan, and Pakistan and have led in recent years to reinfection of other countries. As long as the virus exists anywhere, it can continue to threaten the unimmunized globally. As examples, 2010–2011 polio outbreaks in Tajikistan and the Republic of the Congo, which had been polio free, resulted in hundreds of cases of paralytic polio and a significant death rate among infected adults.5 In addition, some estimates predict an eventual increase of tens thousands of paralyzed children per year if eradication fails.6 “If eradication fails, we are going to see a huge and vicious upsurge of this disease with consequences that it is very difficult even to foresee right now,” Aylward said.7

But disease eradication is a difficult endeavor, and the effort against polio has certainly been no exception. Although the initiative has reached 2.5 billion children worldwide,8 some estimate several million children have not received a single vaccine dose in some areas, a situation attributed to management weaknesses at all levels.9 Meanwhile, post-9/11 geopolitical conditions have made the program a target of anti-Western sentiment in some areas where polio continues to circulate, a development that is hindering acceptance of the polio vaccine and threatening the safety of health workers on the ground. Indeed, the prolonged, resource-intensive GPEI has tested the resolve of donors, vaccinators, and even those the program is trying to help: some in developing countries wonder why there are multiple rounds of polio vaccination while other more pressing health concerns are seemingly ignored.10, 11 To build support for the initiative in remaining endemic areas—

4 Author interview with Bruce Aylward, assistant director-general for polio, emergencies, and country collaboration, World Health Organization (WHO), September 7, 2012.
where transmission of polio has never been broken—the GPEI is better engaging community leaders and broadening its activities to address health issues of most concern to local citizens, an effort that appears to be having some success: worldwide polio cases are at an all-time low, and the virus is now contained to the smallest geographical region ever. As a result, the initiative’s prospects are considered to be the most positive yet.12

The challenges to completing the job of polio eradication are substantial. Yet, the rewards of success would be great. Beyond the significant humanitarian achievement associated with ridding the world of a feared disease, if strategically supported through eradication and a “legacy” planning period, the initiative could set the stage for enduring benefits for other aspects of global public health. These include an improved global disease surveillance system, greater resources for delivery of routine immunization services, and methods for improving access to health services worldwide. In addition, U.S. support for polio eradication provides an opportunity to showcase American values by facilitating improved health worldwide through the transfer of technical and operational skills, as well as needed resources. Economically speaking, the GPEI could produce savings of up to $50 billion for the period 1988 through 2035 as a result of prevented polio treatment costs and gained productivity.13

This paper provides an overview of the global polio eradication effort, emphasizing the U.S. role. The purpose is to explain how the GPEI came to where it is today and discuss plans for moving it forward. A focus on the United States is not meant to detract from the enormous international investments or essential contributions of individuals from other countries. By highlighting American involvement, this paper aims to help U.S. policymakers understand the cost, benefits, and challenges of polio eradication and plans to complete eradication and transition GPEI methods and resources into other programs.

The Global Polio Eradication Initiative (GPEI) is spearheaded by WHO, Rotary International, CDC, and UNICEF. The polio eradication coalition includes governments of countries affected by polio; private-sector foundations; development banks; donor governments; the European Commission; humanitarian and nongovernmental organizations and corporate partners. Volunteers in developing countries also play a key role: 20 million people have participated in mass immunization campaigns.

Source: Global Polio Eradication Initiative.


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Source: Global Polio Eradication Initiative.

The United States and the Fight against Polio

Polio is a highly infectious disease. It enters the body through the mouth and invades the central nervous system. It usually affects children and can cause paralysis in a matter of days. One in 200 infections leads to permanent paralysis, typically of the legs. Of those paralyzed, 5 to 10 percent die when their breathing muscles become immobilized.

Polio gripped the United States in the first half of the twentieth century. President Franklin Roosevelt was infected as an adult in 1921 and suffered lifelong disabilities as a result. At its peak, vicious outbreaks in the late 1940s and early 1950s affected tens of thousands of American children and caused panic and closure of public spaces. In 1952, the worst year for the disease in the United States,
Physicians recorded nearly 58,000 cases of polio. Of those infected, 3,000 died while at least 21,000 were left with some level of paralysis. Americans were haunted by images of children encumbered with leg braces and crutches, or worse, confined sometimes for life in artificial breathing machines known as iron lungs. Fear and compassion fired the American will, spurring innovative fundraising and groundbreaking research efforts led by the March of Dimes. The drive led to the development of two game-changing vaccines: Jonas Salk’s inactivated polio vaccine (IPV) in 1955 and Albert Sabin’s oral polio vaccine (OPV) in 1961.

Large-scale immunization efforts with Salk’s injectable killed virus vaccine dramatically reduced polio incidence in the United States. Immediately before the vaccine became widely available, U.S. polio cases averaged 45,000 a year. The number fell to 910 by 1962. Sabin’s vaccine, a weakened live virus vaccine given orally, was a fraction of the cost per dose of IPV and could be administered with minimal training by non-health worker volunteers, making it well suited for mass campaigns. It also provided longer lasting protection and conferred community immunization through the passage of weakened virus from person to person, thus immunizing close contacts as well. It became the vaccine of choice in the United States from 1963 until the late 1990s. Despite its advantages, the OPV has one major drawback: in one of every 750,000 first doses administered on average, it causes poliovirus paralysis either in the person immunized or a close contact. As it became clearer that the vaccine itself caused the few remaining paralytic polio cases in the United States, public health officials switched back to IPV in the late 1990s, a move that also has been made by most industrialized countries. The last case of naturally occurring “wild virus” polio in the United States was recorded in 1979. The last domestic case of vaccine-related polio was in 1999.

Success in the Americas

OPV vaccine developer Albert Sabin was a major proponent of eliminating polio from large geographical areas globally. Early successes with vaccine trials in Mexico in 1959 bolstered Sabin’s contention that, even in underdeveloped countries in tropical climates where the disease can be found year round, mass vaccination campaigns using his inexpensive, easy-to-administer oral vaccine could eliminate the virus. In 1960, Sabin tried but failed to convince the World Health Organization to increase global efforts against polio. After Cuba eliminated the virus through mass campaigns in 1962, Sabin urged similar programs for other countries in Latin America, but his efforts again were unsuccessful.

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15 Ibid.
16 Elimination refers to removing a disease from a geographic region, while eradication involves permanently reducing to zero the incidence of the infection worldwide.
The tide started to change in the decades that followed, thanks to the successful smallpox eradication campaign. While proposed in 1958 by the Soviet Union, the United States provided significant funding, as well as leadership through CDC and WHO. The global eradication of smallpox, certified by WHO in 1979, created a cadre of public health professionals, including many Americans, transformed by the program’s accomplishments. They brought optimism, technical expertise, and inspired leadership to large-scale disease control efforts. “I had no intention whatsoever of going into public health or vaccines until I worked in smallpox,” said Walter Orenstein, who participated in smallpox eradication as a CDC staffer and then served in leadership roles in CDC’s immunization program. “I changed my whole career path after seeing this terrible disease disappear before my eyes…with a vaccine.”

The vision and energy of the smallpox veterans propelled a rapid move to consideration of other global disease eradication targets. Shortly after smallpox certification, the U.S. National Institutes of Health’s Fogarty International Center sponsored a conference on the eradication of infectious diseases, where participants named polio, measles, and yaws as the most likely candidates. Building on that effort, the National Institutes of Health (NIH), the Pan American Health Organization (PAHO), and WHO hosted an International Symposium on Poliomyelitis Control in Washington in 1983 to discuss attacking polio on a regional basis. A few years later, CDC staffers and former director William (Bill) Foege were among the principal authors of a 1987 paper making the case for global polio eradication. They cited generating political and social will, managerial constraints, and vaccine efficacy and costs as possible impediments, but said they thought these could be overcome with “intensified effort and increased international collaboration.”

In the meantime, Brazil had started what would become the first proof of concept for polio elimination in a developing country. It launched a series of national polio immunization days over several years beginning in 1980 to increase immunization levels over those achieved through routine services. The campaigns were held twice a year, one to two months apart, and facilitated OPV administration to 20 million children under age five regardless of their previous vaccine history. The number of paralytic polio cases dropped from an average of 2,330 per year to 122 cases in 1981.

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19 Author communication with Walter Orenstein, associate director, Emory Vaccine Center, and professor of medicine, Emory University, August 30, 2012.
20 Dowdle and Cochi, “Global Eradication of Poliovirus: History and Rationale.”
22 Dowdle and Cochi, “Global Eradication of Poliovirus: History and Rationale.”
and virtual elimination by 1983.\textsuperscript{25} In 1985, inspired by the success, PAHO director Carlyle Guerra de Macedo proposed eliminating wild poliovirus from Latin America and the Caribbean by 1990. Using a strategy of improved routine vaccination, intensified surveillance, periodic mass campaigns, and “mop up” activities to investigate and provide vaccines around any known cases of paralysis, the PAHO program eliminated polio from the Americas in 1991, an achievement that was certified in 1994.

**American Leadership Helps Spur a Global Campaign**

U.S. engagement in the Latin American campaign presaged its role in the global effort. Between 1988 and 1994, USAID provided PAHO with $50 million, which supported regional advisers and staff training, as well as operational costs for polio surveillance and laboratories. CDC experts served as policy advisers, provided specialized reference laboratory support, and offered training and technical expertise to help develop capacity for diagnosis and surveillance activities. CDC also served as the WHO Collaborating Center for Enterovirus Reference and Research, the primary reference laboratory for the elimination effort, beginning a more than two-decade-long involvement in enhancing polio surveillance and virus tracking techniques.\textsuperscript{26} Among the reference laboratory’s major contributions were improvements in genetic sequencing of the poliovirus. The technique, developed in 1985, allowed virologists to distinguish between vaccine-related and wild viruses as potential causes of paralysis. The method also allowed for the tracking of polioviruses and determination of their origin.\textsuperscript{27}

The PAHO polio campaign’s growing success became a major selling point for those pushing a global effort. A key leader was former CDC director Foege, a founder of the Task Force for Child Survival, an Atlanta-based group that brought together WHO, UNICEF, the UN Development Program, the World Bank, and the Rockefeller Foundation. In March 1988, the task force convened a meeting in Talloires, France. The 60 global health experts participating produced a declaration that included a list of global goals to improve maternal and child health. It suggested that, among other things, national and international bodies consider global eradication of polio as a target to be achieved by the year 2000.\textsuperscript{28}

Building on the Declaration of Talloires, WHO director-general Halfdan Mahler placed a resolution calling for global polio eradication on the agenda for the May 1988 World Health Assembly (WHA). It passed unanimously and unusually swiftly by WHA standards. Among the factors moving the resolution forward were the forceful personalities of several of the primary players, including

\textsuperscript{25} Hampton, “Albert Sabin and the Coalition to Eliminate Polio from the Americas.”


Americans Foege and then–UNICEF executive director James Grant. Foege had been instrumental to smallpox eradication and was an inspirational leader for many in global health. Grant was another transcendent leader and enthusiastic polio eradication supporter. In addition to these strong voices, another critical factor was the enormous financial, advocacy, and personnel commitments made by Rotary International.

Rotary International is a service club with 1.2 million members in 34,000 clubs worldwide. On New Year’s Day, 1986, it publicly announced plans to immunize all the world’s children against polio by 2005 to celebrate its centennial occurring that year. The target was undertaken on the advice of Albert Sabin and propelled by Rotary members’ experiences with polio either personally or through friends or family members. The global strategy called for establishing partnerships with health officials in developing countries, raising money for vaccine purchases, and enlisting “one million Rotary club members as foot soldiers in the task of delivering the vaccine to the more than 100 million children born each year in developing countries.” Rotary has provided more than $1 billion in funding for global polio eradication and donated thousands of volunteer hours, as well as in-kind contributions. Rotary’s commitment and advocacy, which started during the polio regional elimination campaign in the Americas, has helped sustain the effort throughout its history. Rotary is a spearheading partner for the GPEI, along with WHO, UNICEF, and CDC.

Despite great enthusiasm for the program in some quarters, reaction to the resolution’s passage, including among some WHO staff, ranged from indifference to outright opposition. Although all countries had committed to polio eradication through the WHA resolution, real dedication was slim in some places. Hiroshi Nakajima, Mahler’s replacement as WHO director-general, was not an enthusiastic supporter and did not give the campaign much attention. With interest in and resources for the program initially lacking at WHO headquarters in Geneva, CDC began holding joint annual technical meetings in Atlanta in partnership with WHO starting in 1991. At their peak, the events drew nearly 100 participants from CDC, WHO, and other organizations. WHO took over hosting the annual meeting in 1996 and began to provide more forceful leadership for the effort.

Because CDC initially did not have any specific line item funding for polio eradication, CDC leadership requested an allocation from Congress so they could become more involved. In 1991, CDC received a $3.1 million appropriation for the effort—the agency’s first specified funding for any global health activity. Polio eradication has received broad bipartisan support on Capitol Hill ever
since, largely credited to effective advocacy by Rotary and to lawmakers’ experiences with polio. Congressional appropriations for the program have risen steadily to the current level of about $150 million, with $112 million now going to CDC. The funding has helped support the involvement in polio eradication of hundreds of CDC staff, either through “details” (long-term assignments) or short-term consultancies to WHO headquarters and regional and country offices to work with the governments of polio-affected countries. In 2012 alone, the United States funded 51 percent of WHO polio staff at the Geneva headquarters and from 10 to 90 percent of polio staff in WHO regional and country offices.

While CDC was a proponent and champion of polio eradication, staff at USAID resisted involvement. Officials there asked whether eradication was feasible and whether the effort was the best use of development dollars. They questioned whether the model that had worked so well in the Americas with better health systems and strong central governments would be transferable to other countries. USAID staff was also concerned that a focus specifically on polio would take away resources from efforts to improve routine immunization in countries with weak health systems.36

Others also feared that polio eradication would siphon resources from basic health services. To counteract the effect, the initiative originally was viewed as part and parcel of WHO’s Expanded Program on Immunization (EPI), established in 1974 as a way to continue vaccination efforts after the smallpox eradication program. The WHA resolution authorizing global polio eradication emphasized that “eradication efforts should be pursued in ways which strengthen the development of the Expanded Programme on Immunization as a whole, fostering its contribution, in turn, to the development of the health infrastructure and of primary health care.”37

But routine immunization coverage was not sufficient in some countries to contribute adequately to eradication, and the GPEI ultimately came to rely heavily on mass campaigns to administer OPV. While vitamin A, deworming medicines, measles vaccine, and antimalarial insecticide-treated bed nets were distributed in some areas along with OPV, and the program was able to reach children who were previously untouched by any health services, the GPEI was criticized for drawing scarce resources to attend only to polio and not simultaneously strengthening other services in a sustainable way. Debates continue over the impact of the polio initiative on routine immunization and other services, and the effects vary by country.

Because of their misgivings about the program, USAID officials pushed back on initial attempts by Congress to earmark funds for the agency’s involvement in global polio eradication.38 Nonetheless, the agency started receiving direct funding for polio eradication in 1996 and has since become an

36 Author communication with Ellyn Ogden, worldwide polio eradication coordinator, USAID, August 29, 2012.
38 Author communication with Ellyn Ogden, August 29, 2012.
active supporter while continuing to look at opportunities for broader health system strengthening. Of the total $2 billion appropriated by Congress for eradication so far, USAID has administered $600 million. While avoiding overlap with CDC, the agency used the money directly for polio projects but also worked to integrated disease surveillance and routine immunization programs. It also supported planning, travel, and communications programs that provided education about the benefits of vaccinations. USAID supported polio surveillance through salaries and funding for operating costs and engaged local monitors in communities to report suspected paralysis cases.

**Polio Cases Plummet**

With the concerted effort of national governments and international partners, paralytic polio cases decreased worldwide throughout the 1990s. The number of confirmed wild virus cases fell to 483 in 2001. The WHO Western Pacific and European regions were certified as polio free in 2000 and 2002, respectively.

In 1998, anticipating the successful completion of polio eradication, CDC officials called together veterans of the smallpox campaign to get their “endgame” advice. Participants said the most important factor in finishing the job would be a surge of personnel devoted to program support in the field. In response, CDC started the Stop Transmission of Polio (STOP) Program in January 1999.

At the outset, STOP participants were mostly CDC staff who helped strengthen surveillance, support mass immunizations, and conduct polio case surveillance and follow-up. The program has since expanded its activities to include data management, communications, and broader disease surveillance supporting measles reduction and routine immunization. Participation has also shifted to include volunteers primarily recruited from the international community—veteran public health professionals with at least five years of experience who travel to Atlanta for a two-week training session conducted by CDC, WHO, and UNICEF faculty before being deployed. These volunteers receive no salary, but their travel and living expenses are covered.

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39 Ibid.
Eradication Efforts Stall

Despite the additional personnel, overall polio eradication efforts stalled. The number of cases fluctuated for several years before settling at between 1,000 and 2,000 cases per year for the first decade of the 2000s. Polio transmission had been halted in countries with relatively stable political situations, generally well-functioning health systems, and/or less dense populations that allowed easier access to susceptible children. It also succeeded in less hospitable circumstances including in areas of armed conflict. But ultimately, “none of these approaches could be lifted wholesale from one local to another, given unique challenges, which in some places were extremely daunting in their scope and complexity,” said Hamid Jafari, director of polio operations and research at WHO.41 Vaccinators and supervisors were completely shut out in some areas. Enormous migrant populations defied easy access. Awareness around vaccination was lacking or failing in other locales where refusal rates were high.42 In addition, another twist had developed: in 2000, the initiative confirmed through

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41 Author communication with Hamid Jafari, director of polio operations and research, WHO, November 9, 2012.
42 Ibid.
a polio outbreak on the island of Hispaniola (Haiti and the Dominican Republic) that the virus in OPV can mutate into a form that could circulate in communities with low immunization rates and cause localized polio epidemics.43

Then in 2003, the program suffered another major setback. In Nigeria, several northern states stopped polio immunization campaigns for 12 months after public figures suggested the vaccines might be unsafe and in fact could be an effort to spread HIV and sterilize Muslim girls. The incident resulted in new outbreaks in previously polio-free areas of Nigeria, as well as exportation of poliovirus to 15 countries in west, central, and east Africa, and more distantly to Yemen, Saudi Arabia, and Indonesia.44 The outbreaks were estimated to cost $500 million to control and said to “essentially [end] hopes of eradicating polio” by 2010.45 The United States again stepped in with high-level leadership as Secretary of State Colin Powell urged the United Nations to send in a senior adviser to negotiate an end to the ban.46

With the initiative facing significant obstacles and with little visible progress over most of the decade, interest in the program by its traditional donors was flagging. In 2008, the World Health Assembly called for a new strategy that fostered additional tools and renewed commitment from individual countries and the global effort.

**New Support: The Bill & Melinda Gates Foundation**

It was around then that the initiative started receiving significant support from a new source: The Bill & Melinda Gates Foundation. While the foundation had been involved with the effort with smaller donations in previous years, in 2007 it increased its support through a $100 million matching grant to Rotary International.47 It also began giving funding directly to WHO and UNICEF and hired program staff to work on the initiative. In addition, the foundation proposed innovative financing mechanisms to the remaining endemic countries and through various organizations, including the Islamic Development Bank. Gates Foundation contributions now total more than $1 billion, and polio eradication is considered to be a top priority for the organization. Foundation cochair Bill Gates “saw particular challenges that he believed could be overcome with innovations—and he believed these innovations could be applied to help us tackle other diseases in the future,” said Chris Elias, president of global development for the foundation. “He also saw a make-or-break proposition for global health, an effort whose success would either lead to more excitement and more saved lives,

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44 Author communication with Stephen Cochi, October 11, 2012.


46 Ibid.

47 Author communication with Melissa Covelli, senior program officer, Gates Foundation, November 2, 2012.
or whose failure would siphon optimism.” Bill Gates has played a highly visible role in the initiative, meeting with the presidents of the endemic countries and participating in the development of the February 2009 Abuja Commitments, which encouraged Nigerian state governors to prioritize polio eradication and provide oversight for the effort.

In specific projects, the foundation has provided financing for development of different vaccine formulations. It also funded research and use of satellite mapping and mobile phone systems that helped identify villages in remote areas that were being chronically missed by vaccinators and tracking mechanisms to ensure vaccines were not lost or stolen. The foundation has become a key partner along with the four spearheading organizations in reviewing and setting GPEI policy.

The Final 0.05 Percent

By 2010, only four countries remained where poliovirus transmission had never been interrupted: India, Nigeria, Afghanistan, and Pakistan. In India, the virus was concentrated in dense populations with poor health infrastructure or hard to reach rural or migrant groups. In the other three countries some combination of weak governments, migrant populations, corruption, and anti-Western sentiment combined with poor program management and insecurity to hinder progress.

The program met unique challenges in India. While 3 or more doses of OPV are required to achieve full immunity in industrialized countries, 10 or more were sometimes needed in some areas in the north with poor sanitation. Researchers suspected the situation resulted because children were challenged by other intestinal diseases and did not respond readily to polio vaccine. CDC-supported research indicated that changing vaccine formulations to those that selectively attacked specific strains of the virus would prove more successful in those areas. A switch in 2010 to a bivalent vaccine created a substantial drop in cases: 741 were reported in India in 2009 and 42 in 2010. Further, India’s National Polio Surveillance Program, supported by CDC and USAID, provided extensive high-quality assessments that greatly improved polio surveillance. Health workers vaccinated up to 10 million migrant children at bus stations, construction sites, and on trains. They also used motorbikes and travelled by foot to reach children in remote areas. The program engaged clerics and imams in Muslim communities to help reduce vaccine refusal by parents. Ultimately, the innovations, along with a long-term political and financial commitment from the Indian

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48 Author communication with Michal Fishman, senior communications officer, Gates Foundation, November 9, 2012.
government, closed in on the disease. In 2011, the initiative achieved a milestone some had believed impossible: India stopped polio transmission, with the last case reported in January of that year. The achievement proved to many that eradication was technically feasible even in challenging areas and provided a much-needed boost in morale for the GPEI.

Despite the Indian success, the three other endemic countries continued to struggle: the number of cases actually rose in Afghanistan, Nigeria, and Pakistan in late 2011 compared to the previous year. In addition, the endemic areas continued to export the virus to previously polio-free countries through 2011. Another setback occurred in July 2011 when the press reported that the CIA had used a fake hepatitis B vaccination campaign in Pakistan in the effort to find Osama bin Laden. Later, the Pakistan Taliban banned polio vaccinations in North Waziristan, Pakistan, to protest U.S. drone attacks in the country. Vaccinators have been threatened in some areas, and some have been killed. U.S. staff operates almost exclusively through international organizations, and fieldwork is conducted primarily by local personal. U.S. staff has had increasingly to limit movements in all of the endemic countries to protect its safety.

In October 2011, the Independent Monitoring Board, a panel of global public health experts established at the request of the WHA, issued a report critical of GPEI. It concluded the GPEI lacked innovation and overemphasized the positive at the risk of glossing over problems with the program. The panel reiterated an earlier view that polio eradication should be treated as a “global health emergency” to generate the resources and focus to finally complete eradication. The critique engendered a management shakeup at GPEI that created new coordinating bodies and opened its decisionmaking process more to donors and other stakeholders. The program also has worked with endemic countries to develop new country-specific emergency action plans and to increase host government commitments. In addition, GPEI partners fostered a surge of additional polio workers armed with new tactics, including many used in India’s successful effort.

**CDC’s December 2011 Emergency Declaration**

The U.S. government was a critical component of intensified efforts in 2012. In December 2011, CDC director Thomas Frieden activated the Emergency Operations Center (EOC), a move usually reserved for more acute public health emergencies such as Hurricane Katrina and the 2009 H1N1 epidemic. The activation increased visibility for polio eradication activities, attracted more resources

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to the effort, and gave CDC operations better access to Frieden. The activation allowed CDC to respond rapidly to new outbreaks and improved coordination across different departments.

In fiscal year 2012, at a time when many U.S. government programs struggled to maintain existing funding, CDC received a $10 million boost from Congress over its annual allotment for polio eradication. By February 2012, the number of polio response staff at CDC had jumped from fewer than 60 in December 2011, when the EOC was activated, to more than 100 to support fieldwork at the country level. The higher staffing levels are projected to continue through 2013.

CDC also increased resources for STOP Teams. In October–December 2010, the program deployed 60 STOP participants for three-month terms, but during July–December 2012, there were 160 participants with deployments two times per year for five and a half months each. STOP was allotted $2.5 million from CDC in 2011 and $11.4 million in 2012. Nearly 2,000 people have been deployed since the program began.

The surge in U.S. polio response helped increase attention to polio eradication from other donors and partners. In May 2012, the WHA declared polio eradication a “programmatic emergency,” calling for new strategies and financial resources for the GPEI.58 While the WHA resolution has not yet attracted all the additional capital needed, the GPEI has still had more success this year than last: As of December 12, 2012, there are fewer wild polio cases in fewer geographical areas in 2012 than in any equivalent period in history.59 While warning that a resurgence was still possible, the IMB in November 2012 judged the GPEI’s prospects to be “more positive than ever.”60

**Finishing the Job and Ensuring Sustained Public Health Gains**

Significant challenges remain for the GPEI, and polio eradication promises to continue to be a bumpy, uncertain ride. In order to halt wild poliovirus in remaining endemic areas, the initiative continues to adapt strategies to changing circumstances, better engage local communities, and address local needs. The GPEI also is advocating gradually phasing out OPV to prevent vaccine-related paralysis. The move will require fostering more inexpensive ways of manufacturing IPV, an area of research supported by CDC, WHO, and the Gates Foundation, and promoting stronger routine immunization systems.

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To address remaining challenges, the initiative is working to bring the GPEI back to its 1988 vision: a program that will not only eradicate polio, but will help build sustainable routine immunization systems and connect with broader development including improved delivery of health services.

“We’re going to make sure that even as we succeed in this campaign, that we’re building the foundation for better health for many, many diseases, that we leave in place a primary health care system that’s equipped to reach out and provide vaccinations against all of the infectious diseases,” Bill Gates said at a September 2012 UN meeting on polio eradication.61

The United States is critical to the development and implementation of the polio eradication “endgame” and to considering ways to continue the methods and innovations developed through the program. Among those is establishment of the 146-member Global Polio Laboratory Network. Used for diagnosis, virus tracking, and surveillance, the laboratories are needed to continue polio monitoring, but they can also address other diseases and health situations. The laboratories and the global and regional networks of management and supervision already have been used for measles, rubella, and other vaccine-preventable diseases.62 Polio laboratory staff also was involved in the response to SARS63 and provided epidemiological and health services support to Pakistan during the 2010 floods, as well as assisting in Ebola virus detection in the Democratic Republic of the Congo in 2012.64

To plot the final stages of polio eradication, U.S. agencies and private-sector partners are developing a new strategy that covers 2013–2018. The draft document, to be submitted to the WHA for approval in January 2013, calls for $5.5 billion in funding over the period to interrupt wild poliovirus transmission and introduce IPV into the initiative while preparing for discontinuing use of OPV. The strategy begins a planning phase to examine possibilities for transferring to other health initiatives and activities GPEI assets and innovations: the polio workforce; surveillance capabilities; data management techniques; communications and social mobilization networks; and novel methods for reaching underserved, politically and economically marginalized populations. To reap the maximum benefit from its investment in polio eradication, the United States should continue to provide strong advocacy, leadership, and resources for this phase of the initiative.

The United States has made a substantial, multidimensional commitment to polio eradication. With critical aid from the U.S. government and private-sector partners, the GPEI has helped drastically reduce polio incidence around the world and fostered new tools for improving health in challenging

63 Author communication with Mark Pallansch, chief of Enterovirus Section, National Center for Infectious Diseases, CDC, October 4, 2012.
environments. It also aided in creating an expanded disease surveillance system that protects U.S. citizens abroad and reduces disease importation at home by helping identify and address outbreaks worldwide. Ensuring maximum results from the initiative requires concerted effort not only to complete eradication, but also to explore ways to integrate GPEI lessons and innovations into other health services.

With sustained commitment to polio eradication, the United States could help offer the world a luxury it has enjoyed for decades: freedom from paralytic polio.

_Gandhi once said that his interpretation of the Golden Rule is that he should not be able to enjoy something denied to others… We cannot enjoy having our children and grandchildren free of polio unless we give all parents that same joy._—Bill Foege

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The U.S. Role in Global Polio Eradication

Author
Nellie Bristol

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