PROGRESS AGAINST POLIO

WINNING THE FIGHT AGAINST A DEADLY DISEASE

THE LIVING PROOF PROJECT

U.S. investments in global health are working.

The global fight against polio is one of the largest, most ambitious internationally coordinated health initiatives in history. It has mobilized millions of volunteers around the world, staged mass immunization campaigns of unprecedented size, and helped strengthen the health systems of low-income countries. Today, polio eradication is within reach, but we must remain vigilant.

The global response to polio represents one of the greatest achievements in global health in recent decades. Estimates suggest that 350,000 children were paralyzed by the poliovirus in 1988.[1] Since then, the Global Polio Eradication Initiative (GPEI) has shown that a strong global commitment combined with an unprecedented, internationally coordinated effort has the potential to create greater health equity and attainment of an enormous public health success: the eradication of a devastating disease. Since 1988, about 2.5 billion children have been vaccinated against polio worldwide. In the same period, the global number of polio cases has been reduced by more than 99 percent.

Global Progress

The fight against polio constitutes one of the largest globally coordinated health initiatives in history.[2] It was launched by the World Health Assembly in 1988 to free the world from polio, and is spearheaded by national governments, the **World Health Organization (WHO)**, **Rotary International**, the **U.S. Centers for Disease Control and Prevention (CDC)**, and the **United Nations Children's Fund (UNICEF)**. The effort to eradicate polio has mobilized more than 20 million volunteers in 200 countries, who have helped conduct mass immunization campaigns, known as National Immunization Days (NIDs), of unprecedented size.

Thanks to extraordinary commitments from the global community, funding for polio eradication increased dramatically from $10 million (U.S.) in 1988 to $785 million (U.S.) in 2008, as the program moved into the more difficult areas of the world and set up its on-the-ground infrastructure. An important milestone occurred in 1996, when funding increased to $200 million (U.S.) from less than $50 million (U.S.) just one year before, a big part of which came from the United States government. The G8 countries account for half the financing for the Global Polio Eradication Initiative (GPEI).[3]

Rotary International deserves special mention as a spearheading partner in polio eradication efforts, having played key roles through advocacy, donating funds, and mobilizing volunteers. Rotary launched its PolioPlus program in 1985 and has been driving the vision of a polio-free world since. More than 1 million Rotary members have volunteered in the field during NIDs. Rotary has also played an important advocacy role by leveraging its political access and its grass-roots networks to directly engage policymakers. By 2008, Rotarians had contributed $800 million (U.S.) to polio eradication.

The fight against polio has reaped important dividends for global health in general. Implementing polio eradication strategies, including routine immunization, surveillance, NIDs, and "mop-ups,"[4] has contributed to building up countries' health systems and galvanizing high-level political support by scaling up advocacy and resource mobilization. The initiative has also invigorated research and product development activities.[5]

Innovation and Scientific Advances

The development of vaccines that effectively protect against polio was a major medical breakthrough of the 20th century:

- The first **inactivated polio vaccine (IPV)** was licensed in 1955, followed by a live **orally administered vaccine against polio (OPV)** in 1961. Administered multiple times, the OPV protects a child for life and can interrupt the transmission of the poliovirus. As it can be provided by volunteers, even in low-resource settings, and is inexpensive, it is the vaccine of choice for most national immunization programs, and whenever a polio outbreak needs to be contained.[6]
- Taking advantage of the eradication of type 2 poliovirus, a new **monovalent OPV** was introduced in 2005, which increases immunity levels against poliovirus type 1 nearly three times compared to the original OPV that can protect

against all three types of poliovirus. This can be especially useful in rural and conflict-affected areas, where reaching a child repeatedly is difficult. A **bivalent OPV** that protects against wild polioviruses types 1 and 3—the two wild types currently in circulation—will be available from November 2009.

- Heat-sensitive markers on vaccine vials help vaccinators in remote locations monitor the quality of the vaccine. The development of these **vaccine vial monitors** has enabled polio vaccination to move beyond the formal cold chain while maintaining vaccine effectiveness.

The global polio initiative has also introduced critical management and operational innovations, which have enabled countries to respond more effectively to polio and other disease outbreaks, such as cholera, avian flu, and yellow fever.[7]

- A groundbreaking achievement was the mobilization of millions of volunteers around the world to fight a single disease.
- New ground was also broken in establishing on-the-ground technical support systems. Technical support—spanning expertise from epidemiology to surveillance to management and advocacy—is provided by more than 3,300 on-the-ground polio staff worldwide.[8]
- A global laboratory network consisting of 145 laboratories allows confirmation of suspected polio cases and supports the global polio surveillance system that provides weekly case data from every country on Earth.

WHAT IS POLIO?

Poliomyelitis (polio) is a highly infectious disease that is caused by a virus and mainly affects young children. Eliminated in industrialized countries, polio has remained a challenge for developing countries, particular for the poor, as it spreads among large and dense populations suffering from poor sanitation and hygiene standards. The poliovirus is spread from person to person, primarily through the fecal-oral route of transmission.[19] Most people infected with polio (90 percent) show no signs of illness, are never aware of the infection, and continue to transmit the virus to others.

There are three types of wild (naturally occurring) poliovirus.[20] Circulation of wild poliovirus type 2 was interrupted globally in 1999. The poliovirus can be highly virulent, and one in 200 infections leads to irreversible paralysis, mostly in the legs. Among those paralyzed, 5 to 10 percent die when their breathing muscles become immobilized.

Young children are at high risk. More than 50 percent of all polio cases occur in children under the age of 3.[21] There is no cure for polio, but polio vaccines that effectively protect against polio were developed in the 1950s and 1960s.

Results

Global progress toward polio eradication has been remarkable.

- About 2.5 billion children around the globe have been vaccinated against polio since 1988.[9]
- Global coverage of children with the oral polio vaccine increased from 67 percent in 1988 to 82 percent in 2007.[10]

The dramatically increased coverage with polio vaccination is having an effect. Today, polio eradication is within reach, and if attained, polio would become the second disease after smallpox to have been successfully eradicated from the globe.

- Dramatically reduced polio incidence: In the 20 years following the creation of the GPEI, the number of global polio cases was reduced by more than 99 percent. According to WHO estimates, the number of new polio cases has declined from 350,000 annually in 1988 to only 1,652 in 2008.[11]
- Circulation of wild poliovirus type 2 stopped: The last polio case caused by wild poliovirus type 2 was detected in 1999.

POLIO ERADICATION PROGRESS

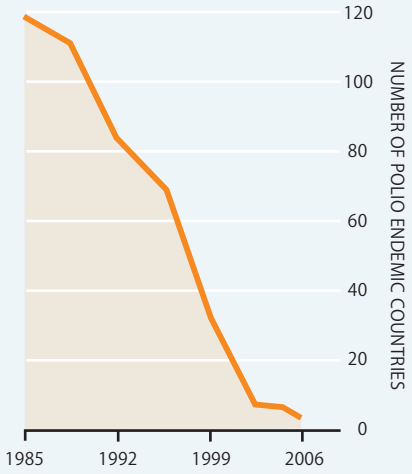

Figure adapted from: Aylward, Bruce R. Polio eradication: Setting the 'context'. Presentation to the Global Polio Eradication's Independent Evaluation Team, June 2009.

- Few endemic areas left: By 2008, the number of endemic countries had been reduced to four—from 125 in 1988.[12] Northern Nigeria, northern India, and parts of Afghanistan and Pakistan are now the only remaining areas where endemic transmission of the poliovirus has not been stopped. These regions account for more than 75 percent of global polio cases today.[13]
- Polio-free regions: In 1994, the Americas (36 countries) were certified polio-free, followed by the WHO Western Pacific Region (37 countries including China) in 2000, and the WHO European Region (51 countries) in 2002.[14]
- Lives saved: 250,000 polio deaths have been prevented in the 20 years since the GPEI was launched in 1988. In addition, more than 5 million people who would have been paralyzed and incapacitated by polio without global support have been protected and are symptom-free.[15]
- Delivery of other critical health services: Beyond polio, millions of lives have been saved through the delivery of other critical health services in the context of polio

immunization campaigns. Millions of insecticide-treated bed nets (to prevent malaria), vaccines, and vitamin A doses have been delivered to people in need.[16] The initiative has also significantly contributed to the reduction of measles cases worldwide by combining mass polio and measles immunization campaigns.

Moving Forward

Translating global and national political commitment to polio eradication into local ownership and accountability is the single most important step toward ending polio. In the parts of the four countries where wild poliovirus is endemic and is still paralyzing children, national and local government authorities need to take additional steps and intensify efforts to protect their children from infection. Ensuring that social mobilization strategies create a greater local demand for polio immunization and assuring that local governments live up to their responsibilities remains a key priority.

While there has been notable progress in these countries, more targeted strategies are necessary to interrupt transmission. The GPEI has launched an accelerated research agenda to explore the best operational and technical eradication strategies for each of the endemic areas. In 2009, an independent evaluation was launched to review the remaining barriers and to create tailor-made, area-specific action plans.

Swiftly stopping outbreaks of polio in previously polio-free areas is critical. Between 2003 and 2007, 27 formerly polio-free countries were temporarily reinfected with imported poliovirus, 20 of them as a result of the virus originating from northern Nigeria. West Africa is experiencing a new polio outbreak from Nigeria that has reinfected eight West African countries since 2008.[17] Aggressive multi-country outbreak responses are currently ongoing in the region. To safeguard the gains of eradication, such outbreaks must be swiftly contained.

Sustained political and financial commitment is required to ensure that the final steps toward eradication can be taken. Stopping the final chains of transmission in the endemic areas and ending the outbreaks of polio in previously polio-free areas requires resources. An estimated total of $2.3 billion (U.S.) is required in external resources between 2009 and 2013, with a funding gap of $900 million (U.S.) (as of August 2009).[18]

COUNTRY SPOTLIGHT: STOPPING POLIO OUTBREAKS IN SOMALIA[22]

Conditions in countries in the midst of civil war or insurgency pose the greatest challenges for polio eradication. Somalia is a country where transmission of the poliovirus was stopped, despite widespread conflict, large population movements, a destroyed public health infrastructure, and a dearth of functioning government, through the use of innovative approaches tailored to conflict areas. Somalia's last case caused by indigenous wild poliovirus was reported in 2002. However, in July 2005 Somalia was re-infected by poliovirus originating in Nigeria, resulting in 228 paralyzed children. Wide-scale response activities successfully stopped the outbreak in spite of the ongoing civil war in large parts of the country. The last polio case was reported in March 2007 in south-central Somalia.

A combination of pioneering approaches was critical to stopping the 2005 polio outbreak in Somalia:

- To ensure rapid detection of new polio cases, WHO's country office, as part of the GPEI, created an informal disease surveillance network, with 100 Somalis across the country providing regular reports of any suspected cases.
- After new polio cases were identified in 2005, surveillance was complemented by large-scale vaccination campaigns throughout the country. Organized by GPEI, 10,000 Somali health workers and volunteers—including community, religious, and traditional leaders—systematically visited every household in every village multiple times to hand-deliver polio vaccines to every child under age 5. This campaign resulted in the vaccination of 1.8 million Somali children.
- To make the most of each contact and immunize children within a short period of time, the GPEI used the new monovalent oral polio vaccine to rapidly boost immunity among children. In war-torn countries such as Somalia, where reaching children repeatedly with a vaccine is uncertain, using this targeted vaccine proved extremely effective.

Somalia demonstrates that polio can be eradicated everywhere, even in the most challenging settings. Such success stories help refine the strategies for eradication and the delivery of other health interventions in conflict-driven countries as well as for underserved and vulnerable communities in non-conflict conditions.

Endnotes

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2. P. Fine, U. Griffiths, "Global Poliomyelitis Eradication: Status and Implications," *Lancet* 369 (21 April 2007): 1321–1322.
3. Global Polio Eradication Initiative, *Programme of Work 2009 and Financial Resource Requirements 2009–2013*.
4. Mop-ups are vaccination campaigns that back up routine immunization and NIDs and focus on high-risk areas or where surveillance detects a rogue virus.
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6. The current OPV price for developing countries is 8 cents (U.S.) per dose, which is five times lower than that of IPV.
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13. http://www.polioeradication.org/casecount.asp.
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15. http://www.polioeradication.org/poliodonors.asp (accessed 16 July 2009).
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17. Global Polio Eradication Initiative, *Monthly Situation Report,* July 2009.
18. Global Polio Eradication Initiative, *Programme of Work 2009 and Financial Resource Requirements 2009–2013,* 2008.
19. This means that polioviruses are usually transmitted through contaminated water and food, or poor cleaning after handling feces. After infection, the virus is shed in feces for several weeks. During that time, polioviruses can circulate silently and rapidly, depending on the level of sanitation, through the community.
20. Apart from wild polioviruses, there are vaccine-derived polio-viruses, which evolve from the oral polio vaccine that, as a live vaccine, carries a small risk of vaccine-derived outbreaks.
21. http://www.polioeradication.org/disease.asp (accessed 16 July 2009).
22. See Global Polio Eradication Initiative, "10,000 Health Workers Stop Polio in One of Most Dangerous Places on Earth: Somalia Passes Polio-free Landmark," press release, http://www.polioeradication.org/content/pressreleases/20080319press.asp.

The Living Proof Project is a multimedia initiative intended to highlight successes of U.S.-funded global health initiatives. Millions of lives have already been transformed and saved with effective, affordable solutions. We have the knowledge, innovative technologies and proven tools to do much more. The content for this progress sheet was developed by the Global Health Group at the University of California, San Francisco and SEEK Development in Berlin. It is also available online at www.livingproofproject.org.