

A ROTARY PRIMER

GLOBAL OUTLOOK

A ROTARIAN'S GUIDE TO THE RACE TO END POLIO



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HOW TO END POLIO

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hat does it mean to “end polio”? Zero reported cases around the globe is the goal, but that’s not all it will take to ensure that the world remains

polio-free forever. The Global Polio Eradication Initiative (GPEI) details the long-term plan to eradicate polio by 2018 in its endgame strategy. In this issue, we speak with **Ciro de Quadros**, an expert on public health, about the final stage of polio eradication; review the four objectives of the endgame strategy; investigate what we’re doing to address the challenges to ending polio; and explain surveillance, a critical step in determining when polio is gone for good. What is your part? Read on to find out how you can help finish the job.

EXPERT ANALYSIS
**A CONVERSATION
WITH CIRO
DE QUADROS**
EXECUTIVE
VICE PRESIDENT
OF THE SABIN
VACCINE INSTITUTE



Ciro de Quadros is one of the world's leading authorities on public health. An epidemiologist, he led the eradication of smallpox in Ethiopia and the elimination of polio, measles, and rubella in the Americas. He lives in Washington, D.C., where he is a member of the Independent Monitoring Board of the Global Polio Eradication Initiative and a professor at Johns Hopkins University and George Washington University. In this excerpt from an interview originally published in *Brasil Rotário* in partnership with District 4651 (part of Santa Catarina, Brazil), he talks about the final stage of polio eradication, Rotary's role, and how the experience will help combat other diseases.

What are the main challenges that the poliovirus creates in countries where it is still endemic?

At this time, the main challenges are related to the management aspects of the programs in Nigeria, Pakistan, and Afghanistan, as well as the security of the vaccinators in areas where there are social conflicts in these three countries – especially in the northeast of Nigeria and northwest of

Pakistan. With the last election in Pakistan, it is not known how the new government will solve these problems.

In the 1980s, you led the efforts to eliminate polio through the immunization program of the Pan American Health Organization (PAHO). Why did you choose polio at that time and not measles?

Polio was chosen because there was already interest among governments to control this disease, and several countries had already stopped its transmission. Because of this, it made more sense to choose polio. And we were right, because after the elimination of the disease in the Americas, the governments started to work on the successful elimination of measles and rubella in the region.

How did Rotary become involved?

The PAHO decision to propose polio eradication coincided with Rotary's interest in the same goal. We discussed with Rotary how we could work together to achieve this goal.

You've said that polio was eliminated quickly in the Americas and the Western Pacific because there were enough resources in those regions. You've also said that lack of resources in recent years has forced frequent changes in the strategy and caused delays in ending polio. But might it

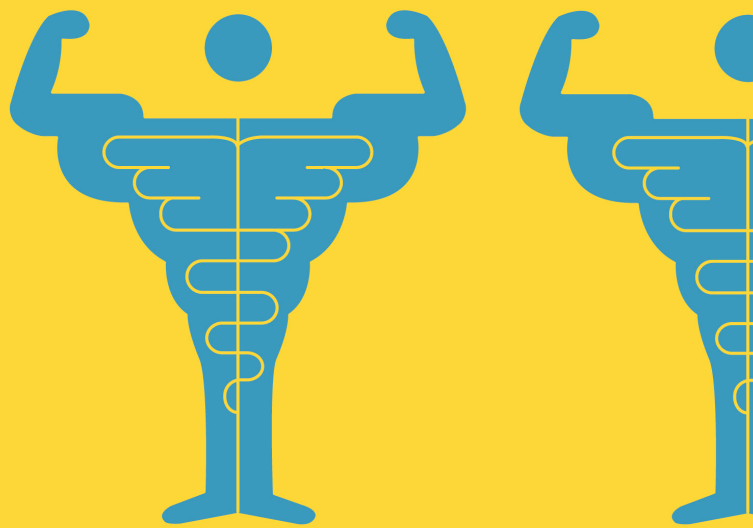
ILLUSTRATIONS BY OTTO STEININGER

TOP CHALLENGES

AND WHAT WE ARE DOING TO OVERCOME THEM

(1) INSTABILITY After attacks on aid workers in Pakistan and Nigeria, national governments and Rotary's partner agencies began adapting operations to protect the safety of health workers. In Nigeria, measures such as "firewalling" – immunizing children traveling through unstable areas to halt the spread of the virus – were put in place. Health teams are also working with security agencies to go quickly into dangerous areas to immunize children, usually for a maximum of two days. In Karachi, Pakistan, police protect teams doing door-to-door campaigns. In other volatile areas, immunization teams ride in vans escorted by police to avoid becoming easy targets for terrorists.

(2) COMMUNITY APATHY To promote local ownership of the eradication effort, the national program in Afghanistan rolled out a communication strategy with the theme "Ending polio is MY RESPONSIBILITY." In Nigeria, the Volunteer Community Mobilizer Network has forged partnerships with religious groups and leaders, including Tsangaya (Koranic) schools, to target high-risk areas. Sani Musa Danja, a popular Nigerian actor and musician, became a Rotary polio ambassador to help with public education and to counter propaganda against the oral polio vaccine. Food and other necessities are also distributed to attract families to immunization drives. In Pakistan, the national PolioPlus committee has engaged with local nongovernmental organizations in high-risk areas to conduct polio immunizations and other health interventions.



have been the opposite – that constant delays discouraged donors, which led to a lack of resources?

This is the catch. On one hand, the chronic lack of resources has always been a big obstacle for the program; on the other, failure to achieve the goals worried supporters. Right now, for the first time in the program's history, the Abu Dhabi meeting conducted by Bill Gates secured [commitments for most of] the resources needed to carry on this initiative until completion. Now there is no longer the excuse of lack of resources, and if the problems mentioned above are handled properly, the program will end the way we all desire.

Since 1988, the polio eradication program has spent US\$10 billion. Until certification of the end of the disease, targeted for 2018, another \$5.5 billion will be needed. That is more than half of all that has been spent so far. Why is the final phase, the endgame, more expensive than the previous one?

In general, in such programs it is necessary to increase resources in the final phase, which is always the most difficult of all. Problems with security, logistics, access to remote areas, and populations that refuse to cooperate have to be overcome.

What are the lessons learned from fighting a global disease, and how can they help us tackle similar problems in the future?

An important lesson is that a program of this magnitude cannot be launched without making sure there are enough resources available. The strategies have to be re-evaluated constantly, so any needed tweaking can be implemented without compromising the results.



During the Global Vaccine Summit in Abu Dhabi in 2013 you announced that we had reached the \$4 billion mark. You said, “Polio eradication now is no longer a public health program, but a diplomatic one.” Could you explain what you meant?

We have resources, a good plan, and excellent scientific and technical support to end polio. The stumbling blocks along the way are safety, terrorism, and social hurdles. To achieve our goals, we have to use all of our diplomatic expertise to open a dialogue with those who oppose the eradication program.

After polio is gone, is there another disease that the world can eradicate?

After polio, measles and rubella could be tackled. Both are already eradicated in the Americas.

How do you evaluate Rotary's role in the Global Polio Eradication Initiative?

Rotary is a very important partner in this initiative, not only for its tremendous financial contribution but for the advocacy with governments and the active work Rotarians perform during immunization campaigns.

For many, including people in your home country of Brazil, polio has become a thing of the past and doesn't pose a threat. What do you say to people who think this way?

The world today is a small village. As long as polio occurs somewhere on the planet, even in faraway lands, no country in the world will ever be free of this disease. ■

(3) ACCOUNTABILITY Each of the three polio-endemic countries has tailored its approach to developing effective immunization teams and addressing community concerns. In Nigeria, traditional leaders select team members. Nigerian Rotarians from the south of the country, which is polio-free, are helping to monitor immunization campaigns in the north. India is providing technical assistance, deploying its medical officers to Nigeria's worst-performing areas to apply lessons learned in its eradication campaign. Afghanistan increased technical support to high-risk districts, including adding full-time district immunization managers. In Pakistan, a summit was held in Islamabad to address issues in high-risk districts. Rotary also launched a network of polio resource centers to promote routine immunization of newborns and infants, create awareness about polio, and build confidence in the vaccine.

(4) MISSED CHILDREN Rather than relying on maps drawn from memory, health workers now use satellite imagery to identify settlements and to ensure that they consistently reach remote places, many of which have nomadic populations. Pakistan's top challenge is in North and South Waziristan in the Federally Administered Tribal Areas, where militant leaders banned polio immunizations in June 2012. Many people fear for their lives if they allow their children to be immunized. Because of conflict, many families have fled the region. Rotary, Pakistan's government, UNICEF, and the World Health Organization are working together to track transient families and children missed by health workers through mobile clinics at bus stands located at all major railway stations and at all border exit and entry points, where they reach 800 to 1,000 children daily. Recently, Pakistan agreed to immunize children at points set up in the international terminals of airports.

(5) INSUFFICIENT FUNDS Rotarians around the world are engaging all levels of government and the private sector, as well as the public, to urge them to provide the necessary financial support to eradicate polio worldwide. Advocacy is critical to raising the \$5.5 billion needed to finish the job.

ENDING POLIO

The four objectives of the GPEI endgame strategy

(1) Stop transmission India was long regarded as the most difficult place to end polio, but through innovation and hard work, the country has gone three years without a case. The endgame strategy builds on this success with a plan to interrupt all wild poliovirus transmission by the end of 2014. It will require rapid detection of the poliovirus, reaching all children in the three polio-endemic countries, preventing outbreaks in areas prone to re-importation by maintaining immunity levels above a set threshold, rapidly responding to any new outbreaks, and enhancing the safety of immunizers.

(2) Strengthen immunization systems and replace the oral polio vaccine with the inactivated version The new plan lays out a strategy to use the existing GPEI best practices and infrastructure to build a stronger system for the delivery of polio vaccine and other lifesaving vaccines, working closely with the GAVI Alliance, a global partnership of public- and private-sector organizations dedicated to immunizations for all.

The oral polio vaccine has been the vaccine of choice for the polio eradication effort because it's affordable, easy to administer, and induces "passive immunity" in the community. That is, because the vaccine is made from a live but weakened version of the virus, the vaccine-virus replicates in the intestines, is excreted, and then spreads through areas with poor sanitation, inducing immunity in others before it dies out. In very rare cases, the excreted vaccine-virus can mutate back to a more virulent, transmissible version and cause paralysis and outbreaks. As the end of polio draws near, the GPEI plans to introduce at least one dose of the inactivated polio vaccine into routine immunization systems. It is more difficult to administer but is made of a killed version of the virus, which cannot mutate and cause infection.

(3) Contain and certify For a region to be certified polio-free, it must go three years without any reported cases. To be sure there are truly no cases of polio, the region relies on a highly sensitive surveillance system to seek out and test cases of paralysis for the poliovirus. The area also needs a way to safely handle the poliovirus for vaccine production, research, and diagnostic facilities, to ensure that the virus doesn't escape and cause an outbreak. So far, the Western Pacific, European, and Americas regions of the World Health Organization have been certified polio-free, and the South-East Asia region could be certified by the end of the year, leaving only the African and Eastern Mediterranean regions to be certified.

(4) Plan polio's legacy Over the past 25 years, the GPEI has trained millions of volunteers, influencers, and health workers. It has reached the most marginalized and vulnerable populations in the world and developed an unprecedented global surveillance and response network, which is already helping to combat other vaccine-preventable diseases and providing assistance during humanitarian disasters. By sharing this blueprint, not only will polio be eradicated but a legacy will be created that will support other health and development initiatives.

TRACKING POLIO

Surveillance is the foundation of the entire polio eradication initiative; without it, pinpointing where and how wild poliovirus is still circulating is impossible. Acute flaccid paralysis – sudden floppiness or lifelessness in an arm or leg – is the most characteristic symptom of poliovirus infection among infants and children, and monitoring regions for the condition is the standard for poliovirus detection. Health officials follow these four surveillance steps to identify new cases and detect importation of the wild poliovirus:

1 A health worker reports a child with acute flaccid paralysis

People who work in health facilities are the first links in the surveillance chain. They are responsible for reporting every case of floppy, lifeless limbs they encounter in children younger than 15. Public health employees also periodically visit at-risk communities to look for new cases of suspected polio. In areas with few health workers, some regions rely on local pharmacists, traditional healers, or religious leaders to serve as community watchdogs and a source of information on paralyzed children. In these areas, posters alerting villagers to what acute flaccid paralysis looks like and how to report potential cases hang throughout many towns.

Determine virus type.

1

Report child with paralyzed limb

2 Deliver two stool samples taken 24-48 hours apart

Workers take stool samples and transport them for analysis

When polio is suspected, a doctor conducts a complete physical exam to determine whether the patient has lifeless limbs and other signs consistent with paralytic polio. Several disorders can cause acute flaccid paralysis, so all children with lifeless limbs must have their stool tested for polio within 48 hours of the onset of paralysis. The samples must be taken 24 to 48 hours apart to account for any variability in the excretion of the virus.

2

Experts map the virus and create an immunization strategy Once virologists have identified wild poliovirus in a stool sample, scientists perform additional tests to determine where the strain originated. They sequence a specific portion of the virus' genome and compare the resulting pattern to reference samples of already sequenced polioviruses circulating in different geographic areas. Once they find a match and pinpoint the new virus to a precise location, scientists can identify the source of importation – both long-range across regions and local cross-border – and determine the appropriate immunization strategy to prevent further spread.



TAKE ACTION } **THE ENDGAME PLAN** depends on us. Rotarians made a promise to fight to the finish to ensure that no child suffers the paralyzing effects of polio ever again. Here's what you can do right now:

1

BUILD AWARENESS Become a polio eradication advocate by signing a petition, sharing the PolioPlus story over social media, launching a fundraising campaign, or telling your polio story to local news media. In the fight to end polio, your voice is a powerful tool.

2

RAISE FUNDS Rotary and the Bill & Melinda Gates Foundation are extending their partnership during the critical endgame phase of the Global Polio Eradication Initiative. From 2013 to 2018, the Gates Foundation will match two-to-one (up to \$35 million per year) every \$1 that Rotary commits in direct support for polio eradication. Contribute at endpolionow.org.

3

REACH OUT Identify corporations and organizations in your community that may be friendly to our cause and ask them to contribute money or provide in-kind support.

4

ADVOCATE Invite elected officials to visit your club or participate in events, encourage their support, and thank those who get involved. Support the effort until the world is certified polio-free.