* **What you don’t know about the campaign to end polio**
* *From the* [*July 2016 issue*](https://www.rotary.org/en/node/228186) *of The Rotarian*
* When was the last time there was polio in Europe? If you guessed 2002, the year the region was certified polio-free, you were wrong. The last time polio affected a child in Europe was last summer. In 2015, two Ukrainian children were diagnosed with paralytic polio, and, given the way the disease manifests itself, that means many more were likely infected and didn’t show symptoms. At least one Western news outlet deemed the outbreak “crazy” – but the reality is that no place on earth is safe from polio until the disease is eradicated everywhere.
* Ukraine had fully vaccinated only 50 percent of its children against polio, and low immunization rates are a recipe for an outbreak. In this case, a rare mutation in the weakened strain used in the oral polio vaccine was able to spread because so many children had not been vaccinated. To stop it from progressing, the country needed to administer 5 million to 6 million vaccines through an emergency program. But as recently as March, Ukraine’s ability to do so remained in question.
* Finding the occasional case of polio outside Afghanistan and Pakistan, the only countries that have yet to eradicate it, is not unusual. In 2014, just before the World Cup brought travelers from all over the planet to Brazil, the country identified poliovirus in the sewage system at São Paulo’s Viracopos International Airport. Using genetic testing, officials traced its origin to Equatorial Guinea. Brazil’s regular vaccination efforts kept the disease from showing up beyond the airport doors.
* Those are frustrating examples for the thousands of people around the world working to eradicate polio. The fight has come a long way, but it is far from over. And while many involved in the effort say we may detect the final naturally occurring case of polio this year, getting to that point – and ensuring that the disease remains gone – will continue to require money, hard work, and the support of Rotarians around the world.
* **Finding polio**
* One of the most important aspects of the fight to eradicate polio is detecting where the disease is present. This continuous surveillance is complicated and costly. Ninety percent of people infected with the virus show no symptoms, and those who do usually have mild symptoms such as fever, fatigue, and headaches. Only one in every 200 cases of the illness results in paralysis, which means that for every child with signs of paralysis, several hundred are carrying the disease and may not show it.
* But not every case of paralysis is caused by polio. Other viruses that can be responsible for the polio-like symptoms known as acute flaccid paralysis include Japanese encephalitis, West Nile, Guillain-Barré, and Zika. To determine if a patient has polio, doctors must collect a stool specimen and send it to a lab for testing.
* To find the patients who don’t present symptoms or don’t make it to a clinic, Rotary and its partners in the Global Polio Eradication Initiative (GPEI) – the World Health Organization, the U.S. Centers for Disease Control and Prevention, UNICEF, and the Bill & Melinda Gates Foundation – have set up environmental sampling in the areas that are most susceptible to the disease. Fifteen to 20 countries are still at high risk despite having eradicated the illness. Because the poliovirus is most easily detected, and most easily contracted, through stool, researchers take samples from sewage systems and, in places that don’t have sewer infrastructure, from rivers and open gutters.
* GPEI has developed a network of 145 laboratories around the world that can identify the disease, and Rotary has played a leading role in supporting these facilities. But regular environmental surveillance is “logistically not so easy to do and it’s relatively expensive. It adds a considerable burden to the labs to process the sewage samples,” says Stephen Cochi, senior adviser to the director, Global Immunization Division, at the CDC. “It costs real money to keep that network operational, and this lab network is the most highly sophisticated, state-of-the-art infectious-disease network in the world. Rotarians should be proud of that – it’s the No. 1 network, bar none.”
* As part of this system of labs, Rotary has helped fund smaller, more sophisticated local laboratories that are trying to keep track of the complicated genetic variations of the disease. These labs genetically test the poliovirus to follow how it changes as it spreads. All viruses mutate to confuse the human immune system, but the poliovirus is notorious for doing so at a rapid rate. This makes it easier to track the virus’s genetic changes, though the process, vital to the eradication effort, is expensive and will need continued funding. It was these specialized laboratories that allowed Brazilian authorities to trace the virus they found at their airport to Equatorial Guinea.
* “Each virus has a fingerprint,” says Cochi, and that is an essential tool for monitoring how the virus is moving around the world.
* Vigilance is key to successful surveillance, says Michel Zaffran, director of polio eradication at WHO. “We need to go and investigate a case of paralysis, take specimens, and analyze it. This level of vigilance needs to continue in all of the places that no longer have polio to make sure we are really without polio. This is a hidden cost to the program that people don’t realize is absolutely necessary to maintain.”
* **Vaccinate, vaccinate, vaccinate**
* The appearance of polio in Ukraine last year is a perfect example of why vaccination campaigns are essential – and not only in Afghanistan and Pakistan. Large-scale vaccinations are an enormous undertaking that require money as well as thousands of volunteers on the ground. And in places where the vaccination programs have been successful, the challenge is now to locate and vaccinate that small percentage of children who have been missed.
* The vaccine itself isn’t the biggest expense in a vaccination campaign (in fact, Rotary rarely funds vaccines). It’s the distribution of the vaccine – transportation and staffing, for example – that costs so much. In January, money donated by Rotarians covered the costs of a Cameroun vaccination campaign that involved 34,000 vaccinators and 21,000 rental cars, which volunteers used to canvass neighborhoods and travel from home to home administering the vaccine. Funds also went to more than 3,700 town criers and 45 radio spots in Chad, to more than 14,000 local guides and 500 clan leaders to ensure that the children of nomads were vaccinated in Ethiopia, and to provide training and support for 60,000 community volunteer vaccinators in Afghanistan.
* “I think sometimes people don’t realize the scale of what these immunization campaigns are actually like,” says International PolioPlus Committee Chair Michael K. McGovern. “Rotary and its partners have administered 15 billion doses since 2000. We’ve immunized 2.5 billion kids. Repeatedly reaching the kids to raise their immunization levels is very personnel intensive.”
* A vaccination campaign is almost mind-bogglingly complex. Rotarians’ contributions  pay for planning by technical experts, large-scale communication efforts to make people aware of the benefits of vaccinations and the dates of the campaign, and support for volunteers to go door to door in large cities as well as in remote areas that may not appear on any map. It sometimes includes overcoming local distrust of government or outsiders and negotiating complicated religious doctrine. And it means trying to understand the movements of nomadic populations or people pushed out of their homes because of unrest. Regardless of how they live their lives, each of these children must be vaccinated. GPEI has addressed some of these issues by setting up vaccination points in highly trafficked transit areas such as train stations or bus depots.
* “In northern Nigeria, for example, when there’s unrest, the population tends to move out of dangerous areas,” says WHO’s Zaffran. “So we monitor carefully when a certain area is accessible and when it is not. If Boko Haram was present, we wouldn’t vaccinate, but the minute it was a more quiet situation we’d do a hit and run – a vaccinate and run. Go in for a short time and get out.”
* GPEI creates detailed logistical blueprints for vaccination teams, which are constantly refined to ensure that every child is reached. In a process called social mapping, health care workers meet with residents of remote or conflict areas and ask them to draw their area, comparing it with maps and other data to try to find settlements that may have been missed. On top of the challenge of discovering previously unknown villages or the difficulty in ensuring that every house in a city has been visited by volunteers, there’s the complicated task of negotiating the religious or cultural beliefs that might prevent people from agreeing to be vaccinated. This is one of the areas in which Rotary has excelled, as local Rotarians have taken on the task of helping to vaccinate their neighbors.
* According to Reza Hossaini, UNICEF’s chief of polio eradication efforts, vaccinators on the ground have developed relationships with local leaders to identify what local people want and need. These relationships have built enough trust to overcome the “hard-core resistance” that vaccinators have met with in the past. But this level of detail in understanding the psychological reasons that a community would be averse to vaccinating requires scientific, technological, and social skill as well as finding vaccinators who meet the specific needs of each community.
* **After the last case**
* Even if the last case of polio is identified this year, a huge amount of work will remain to ensure that it stays gone.
* Vaccinations will continue and need to be funded. In the areas where polio still exists and many of the areas where it has recently been eradicated, the vaccines contain a weakened live version of the virus, which is much more effective than a killed virus at protecting communities from outbreaks, creating what is known as herd immunity. It’s also less expensive to manufacture and distribute and, because it is given orally, much easier to administer than the inactivated, injectable polio vaccine (IPV).
* But, while vaccine with live virus has reduced polio by more than 99.9 percent, it carries a small risk. The weakened live virus inside a vaccine can, rarely, mutate back to a virulent form. Where vaccination coverage is low, it can reinfect populations, even in countries that have been certified polio-free, such as Ukraine. To prevent this, once the virus has been certified eradicated, all of the live-virus vaccine around the world will be destroyed and replaced with IPV, which does not contain the live virus. This vaccine will be distributed, and trained health care workers will perform injections, a process that has already begun. The polio-fighting community will still need to vaccinate hundreds of millions of children every year until the world is certified polio-free. By that time, polio vaccinations will have become part of routine immunization programs around the world.
* Once the final case of polio is recorded, it will take three years to ensure that the last case is, in fact, the final one. That means that if the final case is seen this year, all of these programs will continue to need funding and volunteers until 2019, at a price tag of $1.5 billion that will be funded by governments and donors such as Rotary. That’s in addition to the more than $1.5 billion Rotarians have contributed to the cause so far.
* “We are so close. We’ve got a 99.9 percent reduction in polio. But we’re not there yet,” says John Sever, a vice chair of Rotary’s International PolioPlus Committee, who has been part of the eradication effort since the beginning. “Rotarians and others have to keep working. People will naturally say, ‘Well, it seems to be basically gone so let’s move on to other things,’ but the fact is it isn’t gone, and if we move on and don’t complete the job, we set ourselves up for having the disease come right back.”
* “Rotary was there at the beginning,” McGovern says. “It would be unfortunate if Rotary isn’t there at the finish line. We’ve done too much, we’ve made too much progress to walk away before we finish.”
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