

A ROTARY PRIMER

GLOBAL OUTLOOK

A ROTARIAN'S GUIDE TO THE PLUS IN POLIOPLUS



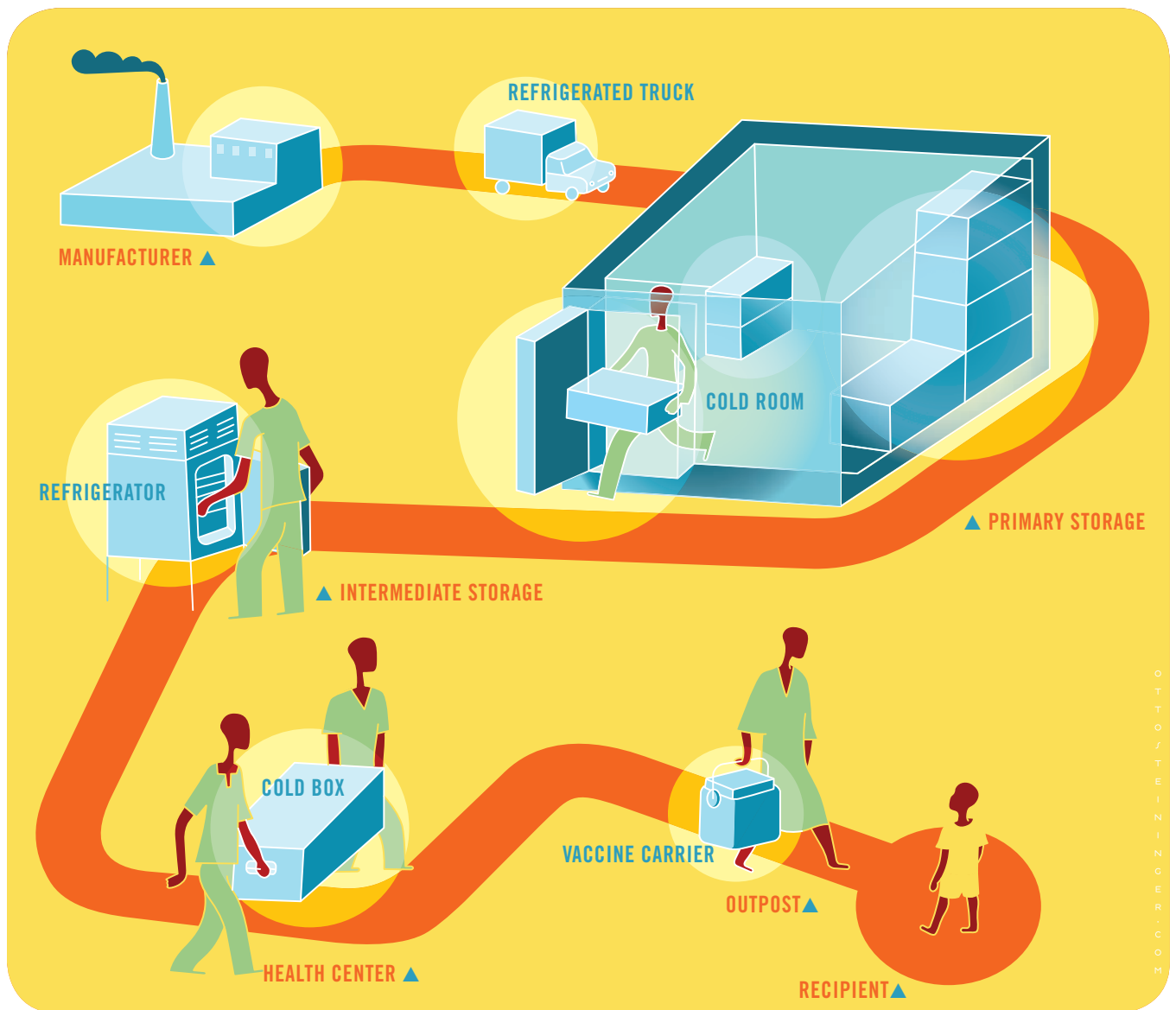
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ONE CAUSE MANY BENEFITS

When Rotary launched **PolioPlus** in 1985, the “plus” signaled the belief that the polio eradication effort would increase immunizations against **five** other diseases prevalent in children: measles, tuberculosis, diphtheria, whooping cough, and tetanus. As time went on, the list of benefits grew. Polio immunization campaigns created an avenue for other **lifesaving** health interventions, such as the distribution of vitamin A supplements. New **equipment** for transporting and storing vaccines made it easier to combat infectious diseases in developing areas. The enormous **network** of laboratories and health clinics charged with identifying new cases of polio began to **monitor** the spread of other viruses as well. And the Global Polio Eradication Initiative, which Rotary helped create, rose to international prominence as a **model** for public-private **partnerships** to address world health issues. The “plus” in PolioPlus means that Rotarians are doing more than stopping the spread of polio in the last four countries in which it is endemic; they also are building a **legacy** of infrastructure and partnerships that will support the fight against infectious disease long after polio is gone.

THE COLD CHAIN

Transporting vaccines to developing areas is no easy task. From the time they leave the manufacturer until they reach recipients, vaccines must be kept between 2 and 8 degrees Celsius (though some may be frozen at -15 to -25 degrees). Variances of even a few degrees could spoil an entire shipment, leaving children without the protection they need. The “cold chain” created to distribute polio vaccine has been used to transport other vaccines, such as measles, tetanus, and diphtheria. An estimated one-third of the cold chain capacity in sub-Saharan Africa was implemented to support polio eradication.



GLOBAL POLIO ERADICATION INITIATIVE

Rotary's partnership sets the standard
by Susie Ma

ONE OF THE MOST IMPORTANT outcomes of Rotary's efforts to eradicate polio could be an alliance you've never heard of.

The Global Polio Eradication Initiative (GPEI) is the massive machine behind the development of new vaccines, the detection and containment of new cases, and the vaccination of hundreds of millions of children each year. It has become the model for large-scale public-private partnerships that can improve millions of lives and fight the spread of disease.

Even if you're unfamiliar with the GPEI, you'll recognize the names of its spearheading partners: the World Health Organization (WHO), UNICEF, the U.S. Centers for Disease Control and Prevention (CDC), and, of course, Rotary International. A decade before the partners came together in 1988, Rotary had embarked on a project to immunize six million children in the Philippines against polio. At the time, international health organizations were busy with the eradication of another deadly virus: smallpox. But when smallpox eradication was certified in 1979, the groups were ready to tackle a new challenge. They chose polio.

"Polio is one of a select number of diseases that is potentially eradicable," explains Stephen Cochi, senior adviser in the Global Immunization Division of the CDC.

The GPEI was born when the World Health Assembly – encouraged in part by Rotary's polio fundraising campaign, which had amassed US\$247 million – adopted a resolution in 1988 to eradicate polio worldwide. In its first decade, the partnership made tremendous progress. In 1988, there were 125 polio-endemic countries and a total of 350,000 new cases. By 2000, those numbers had shrunk to 20 countries and 719 new cases.

One of the reasons for the dramatic decline is the Global Polio Laboratory Network, established in 1990 as part of the GPEI. Scientists use the network to detect movement of the disease from one country to another, helping the initiative address problems where the virus originates and where it migrates. And because the lab network can predict the behavior of the disease and therefore head off major outbreaks, it has become a model for detecting the movement of other vaccine-preventable diseases, such as measles, rubella, yellow fever, and Japanese encephalitis.

"This network of labs will continue to be of great use fighting many other rampant infectious diseases, as well as those becoming more prevalent and dangerous," says Robert S. Scott, chair of Rotary's International PolioPlus Committee.

The GPEI also has made advances in tracking diseases once their prevalence has substantially declined. "When there is a large number of cases, polio is very easy to detect, even if you pick up a small percentage of cases," says Robin Nandy, senior health adviser and polio team lead for



UNICEF: "Once you reduce the number of cases, surveillance has to be extremely robust in order not to miss anything."

The partnership's advanced surveillance system, designed to pick up all new polio cases, is a four-step process: investigating cases of paralysis in children, collecting and transporting stool samples for analysis, identifying poliovirus in the samples, and mapping the movement of the virus to determine its origins.

Another key technical development of the GPEI is the bivalent oral polio vaccine. The bivalent vaccine, which immunizes against types 1 and 3 of wild poliovirus (type 2 was eliminated in the wild in 1999), is more effective than the traditional trivalent vaccine. Development of the bivalent vaccine, which has been in use since December 2009, was possible because of the partnership's active research program.

Despite its successes, the GPEI faces challenges in delivering vaccine to the four remaining polio-endemic countries. Afghanistan, India, Nigeria, and Pakistan all have weak health infrastructures, which makes neighboring polio-free countries vulnerable to migration of the virus, explains Cochi. Eliminating the last 1 percent of polio cases requires new strategies, such as securing political support from national, regional, and local leaders.



MORE BENEFITS OF THE GPEI

Health interventions

Many countries integrate other health interventions with polio immunization campaigns. Vitamin A, which boosts the immune system and helps children fight diarrhea, measles, and other infections, has been widely distributed with polio vaccine. Other simple interventions are insecticide-treated bed nets and deworming tablets.

Immunizations

Bolstering polio vaccine delivery has laid the groundwork for other successful immunization efforts, such as the one to combat measles. According to a recent report, the proportion of Nigerian children covered by routine immunizations nearly tripled between 2006 and 2010, thanks in part to an aggressive campaign. “The vast polio infrastructure that has been built up over the years helps support outreach with broader vaccines to strengthen routine immunization systems, and this has resulted in more than doubling the number of immunized children in some of the least-developed areas of Africa and Southeast Asia,” says Roland Sutter,

coordinator of research and product development at the World Health Organization’s Polio Eradication Initiative.

Disaster response

Local polio immunization networks can be mobilized in the event of disaster-related health emergencies. Vehicles, radio equipment, data analysis and transfer capacity, and office space can swing into service during public health emergencies, such as those resulting from the 2004 tsunami in Southeast Asia and the 2010 floods in Pakistan. Members of the networks also use their knowledge of communities, health systems, and governments to aid in emergency planning and response.

Economic benefits

According to a study published in the journal *Vaccine* in 2010, the GPEI could result in economic benefits of US\$40 billion to \$50 billion between 1988 and 2035. The report also estimates an additional \$17 billion to \$90 billion in benefits resulting from the distribution of vitamin A supplements.

Rotary’s network of 1.2 million members has been crucial to mobilizing local support for the GPEI. “Because of Rotary’s network, we have been able to scale up our work at the country level,” says Nandy. “Rotary has been a key partner in ensuring that we secure meetings with high-level government officials, presidents, and prime ministers.” He credits Rotary with facilitating meetings with Pakistani President Asif Ali Zardari, resulting in his commitment in January to an emergency plan to stop polio in his country.

The partnership also has brokered Days of Tranquility in Afghanistan, Chad, Somalia, and Sudan, persuading warring factions to lay down their arms long enough to allow children to receive the polio vaccine. “It’s a hallmark of polio eradication going back to the mid-1980s,” Cochi says. “It’s a model for how to pursue such issues in the context of other disease prevention.”

The GPEI model can serve other health partnerships, such as those fighting AIDS, tuberculosis, and various childhood diseases. A Rotarian project to combat the spread of AIDS in Kenya and Uganda cited GPEI-led National Immunization Days as the example for securing funding and mobilizing volunteers.

Rotary has stepped in to help with another major challenge for the GPEI: closing a funding gap of \$590 million. Rotary’s US\$200 Million Challenge, and the \$355 million in grants from the Bill & Melinda Gates Foundation that it’s designed to match, are crucial to ensuring continued funding for polio eradication.




“The landscape of public health has changed in the last 20 years,” Nandy says. “How the spearheading partners have engaged with the Gates Foundation and included it as one of the major partners is a good example of how we have evolved.”

Such a massive, long-term effort requires trust and communication. The partners of the GPEI meet regularly, by phone and in person. Constant communication helps the initiative address diverse points of view and respond to situations with one voice, Nandy says. “Every partnership will have challenges. Our strength is in the ability to overcome challenges before they become a major problem.”

Most important, the GPEI has demonstrated what is possible when the public and private sectors work together.

“Polio eradication efforts have shown how to reach every child, everywhere,” says Roland Sutter, coordinator of research and product development at the WHO Polio Eradication Initiative. “What we have learned is that no matter where populations live, no matter how remote, children can be reached with health interventions.” ■



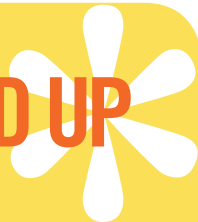
-  Specialized reference laboratory
-  Regional reference laboratory
-  National/subnational laboratory



THE GLOBAL POLIO LABORATORY NETWORK

Established in 1990, the Global Polio Laboratory Network has 146 accredited labs for detecting and tracking the incidence of poliovirus around the world. National laboratories provide the foundation for polio surveillance. Stool samples from areas with suspected cases of the disease are sent to these labs to test for the poliovirus. Regional reference laboratories then determine the origin of detected poliovirus – either wild or vaccine-derived. Finally, incidences of wild poliovirus are referred to one of seven global specialized laboratories in order to monitor the movement of the disease. Most of the laboratories also test for other diseases, including measles, yellow fever, and Japanese encephalitis.

BENEFITS OF POLIO ERADICATION ADD UP



REDUCTION IN GLOBAL INCIDENCE OF POLIO

99%



125



4

CHANGE IN NUMBER OF POLIO-ENDEMIC COUNTRIES

1,000



3

CHANGE IN NUMBER OF CHILDREN PARALYZED BY POLIO EACH DAY

MORE THAN

US\$ 8.2

BILLION INVESTED GLOBALLY

MILLIONS OF VOLUNTEERS

20

BILLION'S OF CHILDREN IMMUNIZED

2.5

MILLION'S OF PEOPLE WHO WOULD OTHERWISE HAVE BEEN PARALYZED

5

MILLION'S OF LIVES SAVED BY VITAMIN A ADMINISTERED WITH POLIO VACCINE

1.5



SINCE THE GLOBAL POLIO ERADICATION INITIATIVE LAUNCHED IN 1988

SPECIAL THANKS TO HERBERT A. PIGMAN FOR HIS ARTICLE "THE 'PLUS' IN POLIPLUS" (JULY 2006).