

Repurposing Global Polio Eradication's Tool Kit

“Polio Legacy” Activities in India



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A Report of the CSIS Global Health Policy Center

SEPTEMBER 2014

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Nellie Bristol¹

The Global Polio Eradication Initiative (GPEI), a 26-year, \$11 billion² drive to eradicate poliovirus worldwide, is one of the largest public health initiatives ever. It is led by national governments together with the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), the U.S. Centers for Disease Control and Prevention (CDC), Rotary International, and the Bill & Melinda Gates Foundation. Involving a variety of partners from NGOs to universities and foundations and engaging millions of health workers and volunteers,³ the GPEI has provided billions of polio vaccine doses around the world. While it recently has faced new outbreaks and international spread of poliovirus, the GPEI has reduced the annual number of polio cases globally by more than 99 percent.

As the number of cases dropped over the years, the disease became concentrated among underserved populations including migrants, nomads, and minorities and in the most challenging areas—those with high population density or remote locations, weak health systems, poor sanitation, civil unrest, and/or distrust of the vaccine or those operating the program. With so much effort and funding at stake, and intense pressure from donors and other interested parties, the GPEI redoubled its efforts to get the job done despite the difficulties. Programmatic innovations resulted that have improved surveillance systems and cold chains, developed effective community engagement and communications strategies, and created meticulous monitoring,

¹ Nellie Bristol is a senior fellow with the CSIS Global Health Policy Center. The author would like to thank the following for the time and insights they contributed to this report: Sahil Angelo, CSIS; Sunil Bahl, National Polio Surveillance Project; Svea Closser, Middlebury College; Stephen Cochi, Centers for Disease Control & Prevention (CDC); Rod Curtis, UN Children’s Fund (UNICEF); Nicole Deutsch, UNICEF; Rina Dey, CORE Group; Talia Dubovi, CSIS; Tim Evans, World Bank; Andrew Freeman, World Health Organization (WHO); Anuradha Gupta, then government of India; Adrienne Hallet, Senate Appropriations Committee; Kaleem Hawa, CSIS; Lea Hegg, Gates Foundation; Vibhor Jain, National Polio Surveillance Project; Deepak Kapur, Rotary International; Rakesh Kumar, government of India; Ramanan Laxminarayan, Public Health Foundation of India; Jeff McFarland, CDC; Nata Menabde, WHO; J. Stephen Morrison, CSIS; Ellyn Ogden, USAID; Carol Pandak, Rotary International; K. Srinath Reddy, Public Health Foundation of India; Karan Sagar, GAVI; Shamila Sharma, UNICEF; Anisur Siddique, UNICEF; Robert Steinglass, John Snow, Inc.; Cathryn Streifel, CSIS; Virginia Swezy, CDC; Arun Thapa, WHO; Bhudendra Tripathi, Gates Foundation; Rakesh Vishwakarma, WHO; Ron Waldman, George Washington University.

² According to the Global Polio Eradication Initiative’s most recent strategy, by 2018 the program will have run for 30 years and cost roughly \$16 billion. See Global Polio Eradication Initiative (GPEI), *Polio Eradication & Endgame Strategic Plan 2013–2018* (Geneva: WHO, 2013), http://www.polioeradication.org/Portals/0/Document/Resources/StrategyWork/PEESP_EN_US.pdf.

³ R. Bruce Aylward and Jennifer Linkins, “Polio Eradication: Mobilizing and Managing the Human Resources,” *Bulletin of the World Health Organization* 83, no. 4 (April 2005): 268–73, <http://www.who.int/bulletin/volumes/83/4/268.pdf>.

accountability, and supervision methods. With these tools and other innovations, the GPEI has been able to vaccinate children who have never been reached by any other health services and increased polio immunization levels worldwide.

While the GPEI continues an acute focus on completing global polio eradication with a strategic plan that takes it through 2018, the initiative also is beginning to anticipate its own post-eradication demise. With that comes the risk of losing the systems and innovations it has developed and funded, many of which could be repurposed to support other health programs. To preserve valuable resources, the GPEI is starting to catalog and assess the specific assets it has created, both tangible and intangible, and explore ways to transfer them to government health systems and other health initiatives. This “polio legacy” planning process has three primary facets. The first is what the GPEI calls “mainstreaming” polio functions, that is, incorporating into other public health programs activities essential to ensure sustained worldwide polio eradication: polio immunization, surveillance, communication, response, and virus containment functions. The second element is ensuring knowledge and lessons learned through polio eradication are shared with other health programs. Third, “where feasible, desirable and appropriate,” the GPEI will transition its capacities, processes, and assets to support other health priorities.⁴

Donors and international organizations are engaged with the planning process, driven by an interest in maximizing the impact of their investments and improving immunization systems in preparation for global introduction of an injectable polio vaccine.⁵

Some countries already use polio resources to address other health issues and can serve as models. India is among them. The country is considered a major success in the effort to eradicate polio, going from the largest global incubator of the disease to being officially declared polio free, along with the rest of WHO’s South-East Asia region, in March 2014.⁶ A two-week CSIS trip to India in late April and early May 2014 employed field visits along with interviews with government officials, health professionals, and representatives of international organizations and local NGOs to explore how the Indian government and others involved with the country’s health system are now capitalizing on their polio assets. India is using polio systems—including microplans, communications networks, personnel, cold chain equipment, and monitoring methods—to improve surveillance and immunization for measles and immunization coverage for other vaccine preventable diseases. Country officials and others involved with the program also say they are harnessing the momentum and confidence generated by polio elimination, along with continued involvement of successful public-private partnerships, to advance other health priorities. With these tools and others, India must continue to safeguard itself against poliovirus as well as strengthen childhood immunization systems and other health programs. As polio-

⁴ GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*, 75.

⁵ As recommended by the World Health Organization’s Strategic Advisory Group of Experts on Immunization (SAGE), all oral polio vaccine (OPV)-using countries are urged to introduce at least one dose of the inactivated polio vaccine (IPV) to their immunization programs as a precursor to eventual worldwide withdrawal of OPV. While OPV provides more comprehensive immunity than IPV, it is a weakened live virus vaccine and can in rare cases cause paralysis. Global eradication of polio requires transition to IPV, which is a killed virus vaccine and carries no risk of paralytic polio.

⁶ World Health Organization (WHO), “WHO South-East Asia Region Certified Polio-Free,” March 27, 2014, <http://www.searo.who.int/mediacentre/releases/2014/pr1569/en/>.

related funding dwindles, India needs to plan a sustainable transition of GPEI assets now supporting these activities.

After a brief history and status report on global polio eradication, this paper then provides an overview of legacy planning as envisioned by the GPEI, followed by a discussion of the risks and benefits inherent in the process. It examines India's efforts to begin broadening its use of polio resources to address measles and other vaccine preventable diseases and discusses the opportunities and challenges involved in those efforts. It concludes with the thoughts of some of the major donors to the GPEI about their potential future support for health activities beyond polio eradication.

The paper also urges the U.S. government, as a major contributor to global polio eradication and to global health efforts generally, to support legacy planning. The United States should look for ways in which country plans to continue using polio systems can further U.S. global health goals. Recommendations include identifying specific polio resources the United States could continue to support, either financially or through technical assistance, to benefit other programs such as overall immunization systems and global disease detection. Both are U.S. priorities—child health through the U.S. Agency for International Development's (USAID) child survival programs and global infectious disease prevention and response through the Obama administration's Global Health Security Agenda and other disease-control activities.⁷ Additional support to other global health activities should be made without taking away from U.S. commitments to polio eradication.

Global Polio Eradication's Wild Ride

The concept of worldwide polio eradication was endorsed by national governments at the 1988 World Health Assembly.⁸ The original eradication target was the year 2000. The program adopted the successful polio elimination⁹ program instituted in Latin America: strengthening immunization systems; intensified surveillance; periodic national mass polio vaccination campaigns using the inexpensive, easy-to-administer oral polio vaccine (OPV); and “mop up” activities to investigate and provide vaccines around any known cases of paralytic polio.¹⁰

At first, success came quickly and the number of global polio cases fell rapidly. But in 2000, progress began to slow. The number of yearly cases worldwide fluctuated between 1,000 and 2,000 for the first decade of the 2000s as the virus became concentrated in challenging areas in four countries: India, Afghanistan, Nigeria, and Pakistan.¹¹ After several years of negligible progress the GPEI and affected countries began making programmatic changes that had an impact: they improved

⁷ GlobalHealth.gov, “The Global Health Security Agenda,” <http://www.globalhealth.gov/global-health-topics/global-health-security/ghsagenda.html>.

⁸ See Nellie Bristol, *The U.S. Role in Global Polio Eradication* (Washington, DC: CSIS, December 2012), http://csis.org/files/publication/121217_Bristol_USRolePolio_Web.pdf.

⁹ Elimination refers to removing a disease from a geographic region, while eradication involves permanently reducing to zero the incidence of the disease worldwide.

¹⁰ GPEI, “Strategy,” <http://www.polioeradication.org/Aboutus/Strategy.aspx>.

¹¹ For more information, see April Chang et al., *Eradicating Polio in Afghanistan and Pakistan* (Washington, DC: CSIS, August 2012), http://csis.org/files/publication/120810_Chang_EradicatingPolio_Web.pdf; and Jennifer G. Cooke and Farha Tahir, *Polio in Nigeria: The Race to Eradication* (Washington, DC: CSIS, February 2012), http://csis.org/files/publication/120210_Cooke_PolioNigeria_Web.pdf.

management and oversight of country and global programs, altered vaccine strategies, and used new communications methods to more effectively impart the importance of polio vaccines to parents and communities.

In 2011, a major breakthrough occurred. India, which generated nearly half the world's polio cases in 2009,¹² reported its last polio-paralyzed child. But challenges continued elsewhere. While at the end of 2012, the world reported its lowest number of annual polio cases ever at 223, program management difficulties and insecurity combined with politically motivated lethal attacks on polio vaccinators in some areas threatened further progress in the three remaining endemic countries: Afghanistan, Nigeria, and Pakistan. Further, virus spread from there to other places struggling with conflict and instability, and to their neighbors. Additional countries reporting cases in 2013 and thus far in 2014 include Somalia, Kenya, Syria, Iraq, Cameroon, Equatorial Guinea, and Ethiopia. At the end of 2013, 416 polio cases had been reported, an 86 percent increase over 2012.¹³ In addition, poliovirus has been found in several sewage systems including in Egypt in late 2012,¹⁴ and more recently in Israel, Brazil, and the West Bank and Gaza.¹⁵ While sufficient vaccination coverage so far has warded off polio outbreaks in those countries and regions, the discovery indicates further virus spread. So far this year, the number of cases worldwide is down compared to the same time in 2013, 178 cases versus 264. However, Pakistan's epidemic continues apace with by far the highest number of cases of any country—145 already this year compared to a total of 93 for all of 2013.¹⁶ Pakistan is considered the country most at risk of further disease and the most likely source of virus spread to other places.

In light of the surge of cases, on May 5, 2014, the WHO director-general declared the international spread of poliovirus a public health emergency of international concern. She recommended that countries exporting virus, Pakistan, Cameroon, Equatorial Guinea, and Syria, ensure all residents and long-term visitors receive a polio vaccination prior to traveling internationally. The WHO encouraged similar action by “polio-affected” countries, naming Afghanistan, Ethiopia, Iraq, Israel, Nigeria, and Somalia.¹⁷

While grappling with the new outbreaks, the GPEI continued to press forward on other goals. To capitalize on the low global number of cases in 2012, reenergize the program, and write for donors what the program hopes is a final chapter for global polio eradication, the GPEI in April 2013 launched the *Polio Eradication & Endgame*

¹² Centers for Disease Control and Prevention (CDC), “Progress Toward Interruption of Wild Poliovirus Transmission—Worldwide, 2009,” *Morbidity and Mortality Weekly Report*, May 14, 2010, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5918a1.htm>.

¹³ GPEI, “Polio this week as of 17 September 2014,” <http://www.polioeradication.org/Dataandmonitoring/Poliothisweek.aspx>.

¹⁴ GPEI, “Wild Poliovirus 2009–2014,” August 19, 2014, http://www.polioeradication.org/Portals/0/Document/Data&Monitoring/Wild_poliovirus_list_2009_2014_19Aug.pdf; and Donald G. McNeil Jr., “Egypt: Poliovirus Is Found in Cairo’s Sewers,” *New York Times*, January 23, 2013, http://www.nytimes.com/2013/01/24/health/egypt-polio-virus-is-found-in-cairos-sewers.html?_r=0.

¹⁵ GPEI, “Polio this week as of 17 September 2014”; and Donald G. McNeil Jr., “Brazil: Poliovirus Detected in Sewage,” *New York Times*, June 23, 2014, <http://www.nytimes.com/2014/06/24/world/americas/brazil-polio-virus-detected-in-sewage.html>.

¹⁶ GPEI, “Polio this week as of 17 September 2014.”

¹⁷ GPEI, “Polio Public Health Emergency,” <http://www.polioeradication.org/Infectedcountries/PolioEmergency.aspx>.

Strategic Plan 2013–2018.¹⁸ The plan laid out four pillars for the program’s next six years, along with a \$5.5 billion price tag. The pillars are:

- 1) Detect and interrupt all poliovirus transmission
- 2) Strengthen immunization systems, introduce inactivated polio vaccine (IPV), and withdraw oral polio vaccine
- 3) Contain poliovirus and certify interruption of transmission
- 4) Plan polio’s legacy

GPEI’s Polio Legacy Vision

The GPEI’s Independent Monitoring Board (IMB) first introduced the concept of a polio legacy. The World Health Assembly established the panel of nine public health experts in 2010 to assess and provide feedback on the GPEI’s progress in achieving global polio eradication. The IMB issues periodic reports aimed at improving GPEI management and effectiveness.¹⁹

In its June 2012 report, the IMB recommended that the GPEI start taking a longer-term view of its “legacy.” Citing mapping capabilities, communications networks, and surveillance capacity, the IMB commented, “So what is to happen when polio has been eradicated? How will all of this potential be used? Or will its legacy be scattered to the four winds?”²⁰ It recommended that the program set out a “compelling vision” for how polio eradication would benefit global health more broadly as part of an “endgame strategy” that finalizes eradication.²¹

In response, the GPEI created the legacy pillar of the endgame plan. Its objective is to “develop a plan to ensure polio investments contribute to further health goals, through documentation and transition of lessons learnt, processes and assets of the Global Polio Eradication Initiative.”²²

Polio eradication legacy planning began in mid-2013 and will result in a “global framework for legacy planning” intended to guide countries through the planning process. Scheduled for submission to the World Health Assembly in May 2015 (see timeline on page 7), the framework will include best practices, examples, and lessons from several pilot countries.²³ Countries will then use the road map to develop their own transition plans. Ultimately, each country will identify the polio resources it has currently, both domestic and external, decide which ones it wants to keep, and determine how that can be accomplished. Where shortfalls exist, either in financial

¹⁸ GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*.

¹⁹ See GPEI, “Independent Monitoring Board,” <http://www.polioeradication.org/Aboutus/Governance/IndependentMonitoringBoard.aspx>.

²⁰ Independent Monitoring Board of the Global Polio Eradication Initiative, *Every Missed Child* (Geneva: GPEI/WHO, June 2012), 20, http://www.polioeradication.org/Portals/0/Document/Aboutus/Governance/IMB/6IMBMeeting/IMB6_Report.pdf.

²¹ *Ibid.*, 21.

²² GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*, 75.

²³ Author communication with Andrew Freeman, GPEI strategy program manager, World Health Organization, August 20, 2014.

Countries Receiving Targeted Immunization System Support from the GPEI

Afghanistan
Pakistan
India
Nigeria
Chad
Democratic Republic of the Congo
Angola
Somalia
Ethiopia
South Sudan

Source: GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*, 53.

resources or technical assistance, the plans will indicate ways the international community could contribute. While GPEI documents says the initiative hopes polio resources will be useful everywhere, it is particularly focusing immunization system strengthening activities where it has the largest number of personnel. These countries also tend to have the lowest immunization rates (see box).

The GPEI considers two of its accomplishments to be especially valuable: its disease surveillance and response capacity and its ability to reach vulnerable populations with health services. The program developed a far-reaching integrated polio surveillance and laboratory network that grew from the need to identify and investigate tens of

thousands of potential polio cases every year. The network also has helped with surveillance and response to outbreaks of measles, tetanus, meningitis, yellow fever, and other diseases as well as to public health and humanitarian emergencies.²⁴

In reaching marginalized groups, the GPEI says, “valuable lessons have been learnt and the polio programme has developed the knowledge, capacities, and systems to overcome the logistics, geographic, social, political, cultural, ethnic, gender, financing and other barriers to working with the most marginalized, deprived and often security-compromised children and communities.”²⁵ Tools used to achieve this goal include “microplanning”—detailed descriptions of how vaccination campaigns should be implemented in each community and who is responsible for what actions—mapping of communities, including detailing the number of children in each household and their immunizations status, and tracking and immunizing mobile and migrant groups.

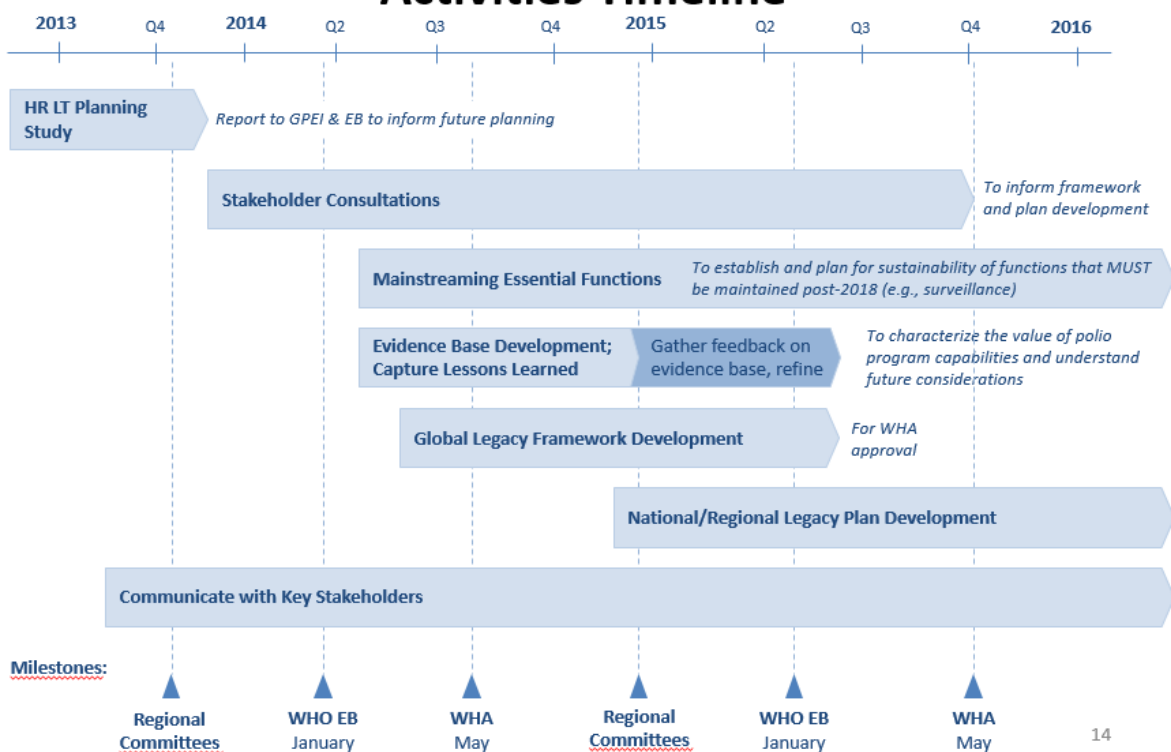
To ensure polio eradication assets and lessons are shared with other health initiatives, the GPEI encourages modifying its tools and innovations to benefit immunization systems and establishing best practices in integrated laboratory and disease surveillance systems, data management and quality assurance, communications and community engagement, microplanning and mapping, and motivating and training health workers.²⁶

²⁴ GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*, 76.

²⁵ *Ibid.*

²⁶ *Ibid.*

Polio Legacy Planning Activities Timeline



Note: HR LT Planning = Human resources long-term planning; EB = WHO Executive Board; WHA = World Health Assembly.

Source: Global Polio Partners Group, “Polio Legacy Planning,” June 16, 2014, http://www.polioeradication.org/Portals/0/Document/Aboutus/PPG/PPG_Mtg20140616_presentation4.pdf.

Challenges and Benefits in Creating a Polio Legacy

Overall polio eradication funding is expected to taper after 2018, although resources will still be needed for long-term polio functions (e.g., vaccination, surveillance and response, and biocontainment). In countries that have eliminated the virus, funding for OPV vaccination campaigns is decreasing already (although additional funding is available for IPV introduction for many).²⁷ As the program winds down, donor interest is expected to flag and there are questions about how enthusiastic supporters will be about continuing to provide resources for activities and programs that

²⁷ Author communication with Ministry of Health officials in Nepal, May 2014; and GPEI, “Table 1: Summary of External Resource Requirements by Major Category of Activity, 2013–2018,” <http://www.polioeradication.org/Portals/0/Document/Financing/RequirementsSummary.pdf>. See also GAVI, the Vaccine Alliance, *GAVI Alliance to Support Introduction of Inactivated Polio Vaccine in the World’s 73 Poorest Countries*, November 22, 2013, <http://www.gavi.org/library/news/press-releases/2013/gavi-alliance-to-support-introduction-of-inactivated-polio-vaccine-in-worlds-73-poorest-countries/>.

countries could arguably be providing themselves, such as salaries for health personnel. As a result, projects and resources supported by the GPEI face an uncertain future. For example, India's National Polio Surveillance Project, a highly respected aspect of the country's polio apparatus, is almost entirely supported by external funding.²⁸ As the GPEI shrinks, alternative funding sources will be needed. On a larger scale, the 145-facility Global Polio Laboratory Network developed by the GPEI is considered to be state-of-the-art. It already has helped monitor and respond to other diseases, thus enhancing global disease detection capabilities.²⁹ But as funding for polio eradication declines, the system could begin to falter.

And then there is the polio workforce. More than 7,000 WHO staff and non-staff contract positions worldwide are supported through polio funding,³⁰ a workforce the GPEI says now makes up “the single largest source of external technical assistance for immunization and surveillance in low-income countries.”³¹ In addition, UNICEF oversees roughly 19,000 social mobilizers in a handful of countries.³² In Africa, the GPEI funds 90 percent of the more than 1,000 personnel carrying out immunization and vaccine development efforts in the WHO regional office. More than half of staff time is spent on diseases other than polio.³³ In fact, the GPEI's *Polio Eradication & Endgame Strategic Plan* calls for all polio-funded field staff to devote 50 percent of their time to immunization system strengthening,³⁴ as the WHO responds to criticisms surrounding narrow use of resources and paves the way for transition to the injectable IPV. Among WHO-supported polio staff are many of the medical officers who are the backbone of surveillance systems. The WHO will not be in a position to continue personnel support at the same level once GPEI resources dwindle and in many cases countries will need to devise alternative funding.

As legacy planning evolves, the GPEI and national governments may well end up wrestling over what resources should be continued and who will pay for them. In India, polio workers already have confronted the WHO about their future employment status.³⁵ While the government employs the bulk of India's polio workforce, others are funded through international organizations with GPEI resources. While some of those workers can be hired as permanent employees of the Indian health system or through other organizations, some could lose their jobs.

Further, as many developing country economies improve and there is a general movement to seek greater country funding of their own health programs, some global health experts are warning that the transition should not be made too quickly. For example, some question whether many low- and middle-income countries actually have the resources and technical capacity to continue internationally funded

²⁸ Author communication with Sunil Bahl, deputy project manager, National Polio Surveillance Project, July 22, 2014.

²⁹ Stephen L. Cochi, Andrew Freeman, Sherine Guirguis, Hamid Jafari, and Bruce Aylward, “Global Polio Eradication Initiative: Lessons Learned and Legacy,” *Journal of Infectious Diseases* (in press).

³⁰ WHO, “Human Resources: Interim Annual Report for 2013, Report by the Secretariat,” January 10, 2014, 42, http://apps.who.int/gb/ebwha/pdf_files/EB134/B134_49-en.pdf.

³¹ GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*, 5.

³² Author communication with Michael Coleman, development specialist—polio, UNICEF, August 21, 2014.

³³ GPEI, *Polio Eradication & Endgame Strategic Plan 2013–2018*, 56.

³⁴ *Ibid.*, 121.

³⁵ Author communication with Nata Menabde, WHO representative, India, April 30, 2014; and Sunil Bahl, deputy project manager, National Polio Surveillance Project, August 25, 2014.

HIV/AIDS programs and if national governments will ensure resources are provided to populations that are most in need.³⁶ Some country health officials are expressing similar concerns about polio eradication resources.³⁷

With all the potential questions and uncertainties, concerted polio legacy planning is the best way to provide as orderly a transition as possible and is essential to ensuring that valuable global health resources do not unintentionally vanish. A recent paper examining the effects of polio eradication on other health services found “polio eradication’s surveillance, communications, and service delivery systems were unmatched in terms of combining quality with reach.”³⁸ The researchers concluded that while polio eradication resources can provide support for other health activities, “many opportunities to do so remain missed.” In an interview, study lead author Svea Closser noted, “These resources took a lot of time, effort, and energy to build and they’re strong.” But, she added, an “aggressive move” is needed to ensure they continue and make the transition to other health priorities. “It isn’t going to evolve by itself,” she said.³⁹

But planning a polio legacy also could arouse detractors. There are those who will criticize the GPEI for planning its legacy before it has completed the job for which it was hired. It also could attract critics of the eradication effort itself. When it began, polio eradication was expected to occur as part of WHO’s Expanded Programme on Immunization (EPI), an effort to increase routine immunization levels worldwide.⁴⁰ As the GPEI evolved and it became clear that polio eradication was more difficult than originally envisioned, particularly in countries with weak health systems, GPEI activities became increasingly separate from the EPI and other immunization efforts. Some critics say polio eradication has drawn too heavily on health workers who should have been focusing on broader issues and captured donor funding that could have been used to build longer-term health infrastructure more securely within country health systems. By transferring resources to other activities, polio legacy planning could offer some solace to those who have questioned the program’s single

³⁶ David Wilson and Braedon Donald, “Too Soon for Rich Countries to Stop HIV Funding in Poor Ones,” *The Conversation*, July 3, 2014, <http://theconversation.com/too-soon-for-rich-countries-to-stop-hiv-funding-in-poor-ones-28717>.

³⁷ Author communication with Shyam Raj Upreti, director, Child Health Division, Government of Nepal Ministry of Health and Population, May 12, 2014.

³⁸ Svea Closser et al., “The Impact of Polio Eradication on Routine Immunization and Primary Health Care: A Mixed-Methods Study,” *Journal of Infectious Diseases* (April 2, 2014): S1–S10.

³⁹ Author communication with Svea Closser, assistant professor of sociology and anthropology, Middlebury College, April 16, 2014.

⁴⁰ Routine immunization refers to vaccination systems that are able to regularly immunize populations against a wide range of vaccine preventable diseases, such as tetanus and diphtheria, usually focusing on children. For optimal effectiveness, vaccines should be provided on a specific schedule. WHO provides recommended immunization schedules (see http://www.who.int/immunization/policy/immunization_tables/en/), but countries generally develop their own plans based on local diseases and resources. For more information, see Robert Steinglass, “Routine Immunization: An Essential but Wobbly Platform,” *Global Health Science and Practice* 1, no. 3 (November 14, 2013): 295–301, <http://www.ghspjournal.org/content/1/3/295.full>. Also see Phillip Nieburg and Nancy M. McLaren, *Role(s) of Vaccines and Immunization Programs in Global Disease Control: Mind the Nitty-Gritty Details* (Washington, DC: CSIS, December 2011), http://csis.org/files/publication/111221_Nieburg_RolesofVaccine_WEB.pdf; and Stephen L. Cochi, *The Future of Global Immunization: Will the Promise of Vaccines Be Fulfilled?* (Washington, DC: CSIS, December 2011), http://csis.org/files/publication/111205_Cochi_FutureGlobalImmun_Web.pdf.

focus. But it also could be viewed as an attempt to justify and continue a costly endeavor that some feel has gone on too long.⁴¹

India Pivots to Routine Childhood Immunization

There were those who did not think it possible, including many involved in the massive effort, but in January 2011, India reported its last case of polio.⁴² Success was achieved through solid financial, political, and logistical commitments from the national government, unwavering support from the international community, and innovative, relentlessly methodical record keeping and oversight. To reach children in the most remote areas, vaccinators had to walk for hours, use boats and motorcycles, and negotiate floods and droughts. They had to track and vaccinate the country's massive contingent of internal migrants, which has been estimated at 326 million people, a full 28 percent of the population.⁴³ They had to overcome cultural barriers and distrust of the government in the highly populated states of Uttar Pradesh and Bihar where more than half of the country's polio cases occurred. Then there is the sheer size of the population: vaccinators immunized 170 million children under five years old in mass campaigns at least twice a year.

Success in India required continuous real-time data feedback that allowed for immediate midcourse corrections, nuanced and effective communications with those resisting the vaccine, and ownership of and involvement in the program from the national government down to individual neighborhoods. Special strategies were developed for high-risk areas where population density and poor sanitation created reservoirs of poliovirus that led to repeated infections of other parts of the country and the world. Highly sensitive surveillance systems allowed the investigation of nearly every suspected case of paralysis.

There are several key elements to India's polio elimination program now being adapted to support that country's other immunization systems and health programs:

- *Planning, supportive supervision, and accountability:* Multiple layers of data collection and analysis, planning, and oversight were established and run by a variety of program participants. They included district task forces, overseen by district magistrates, as well as sub-district and block level committees. Participants included program administrators, surveillance medical officers (SMOs), community leaders, and Rotary International officials, along with staff from WHO, UNICEF, and local NGOs. During polio campaigns, vaccinators used microplans to plot their vaccination activities in each neighborhood and to track results. The district task force reviewed the records to determine where children were missed and develop actions for ensuring they were immunized. Sub-district and block-level task forces helped implement corrective actions and provide further

⁴¹ See Donald G. McNeil Jr., "Gates Calls for a Final Push to Eradicate Polio," *New York Times*, January 31, 2011, http://www.nytimes.com/2011/02/01/health/01polio.html?_r=0.

⁴² For more on polio elimination in India, see Teresita C. Schaffer, *Polio Eradication in India: Getting to the Verge of Victory—and Beyond?* (Washington, DC: CSIS, January 2012), http://csis.org/files/publication/120117_Schaffer_PolioIndia_Web.pdf.

⁴³ UNICEF, "Overview of Internal Migration in India," March 3, 2012, [http://www.unicef.org/india/1_Overview_\(03-12-2012\).pdf](http://www.unicef.org/india/1_Overview_(03-12-2012).pdf).

oversight.⁴⁴ Continuation of these bodies and activities for routine immunization ensures multilevel ownership of the program and provides essential planning and tracking tools.

- *Surveillance:* India's National Polio Surveillance Project (NPSP) is considered the gold standard in its field. Established through a partnership of the government of India and the WHO, with support from the United States and other donors, the NPSP oversees the entire country for cases of paralysis that could turn out to be polio. The network comprises more than 300 surveillance medical officers, 44 supervisors, and 972 field monitors.⁴⁵ Having a quality system to determine disease levels and where they are most concentrated is essential to developing effective immunization systems. The system now is also conducting surveillance for measles and rubella.
- *Communications:* Strategies involve publicizing and generating interest in polio campaigns along with convincing reluctant parents that the vaccine is safe by making repeated visits to households and engaging the services of local influencers—religious leaders, celebrities, and others admired in the community. A key component was the Social Mobilization Network, or SMNet, established in Uttar Pradesh in 2003 and later in Bihar with support from the United States and other donors.⁴⁶ Communicators from UNICEF, Rotary International, and the CORE Group of NGOs⁴⁷ examined the social aspects of why poliovirus transmission continued in some areas, amplified communications strategies in high-risk communities to ensure children were getting vaccinated, and explained to parents the importance of other vaccinations.⁴⁸ Similar approaches are being used to bolster routine immunization.
- *High-risk area strategies:* Some communities in India proved particularly difficult to immunize effectively. New strategies developed by Indian polio partners helped vaccinators reach children in slums, among nomads, and in migrant families found in brick kilns and construction sites. In other new strategies, the 107 Block Plan worked to improve sanitation conditions, treat diarrhea through promotion of zinc and oral rehydration solution, enhance routine immunization services, and step up the quality of polio immunization drives.⁴⁹ In 2008 the Kosi Operational Plan laid out specific strategies for reaching an area that floods frequently, leaving

⁴⁴ Vibhor Jain, "Polio Eradication Activities, Moradabad," presentation, National Polio Surveillance Project, 2014.

⁴⁵ Sunil Bahl, "Polio Eradication in India: Key Factors Behind Success, Leveraging Polio Network for Strengthening Routine Immunization (RI)," Presentation, World Health Organization, India, April 30, 2014.

⁴⁶ Ellen A. Coates et al., "Successful Polio Eradication in Uttar Pradesh, India: The Pivotal Contribution of the Social Mobilization Network, an NGO/UNICEF Collaboration," *Global Health: Science and Practice* 1, no. 1 (March 1, 2013): 68–83, <http://www.ghspjournal.org/content/1/1/68.full>.

⁴⁷ The CORE Group is a collaborative of more than 70 nongovernmental organizations that supports maternal and child health initiatives globally. See CORE Group, "History of CORE Group," <http://www.coregroup.org/about-us/history-of-core-group>.

⁴⁸ Deloitte, "Evaluation of Social Mobilization Network (SMNet)—Final Report," UNICEF, January 2014, http://www.unicef.org/evaldatabase/files/India_2013-001_Evaluation_of_Social_Mobilization_Network_Final_Report.pdf.

⁴⁹ WHO, "The 107 Block Plan: Completing Polio Eradication in the Remaining 107 Blocks," March 2010, http://www.searo.who.int/india/topics/poliomyelitis/Polio_107_block_plan_Mar_2010.pdf.

populations isolated without bridges and roads.⁵⁰ Those administering other vaccines will face the same challenges, and similar approaches are being used.

- *Partnerships:* Polio elimination in India involved intense coordination by local, national, and international partners including medical associations, private health facilities, NGOs, and local and national government entities. The government of India led the effort. It also provided vaccines and implemented vaccination campaigns. UNICEF oversaw communication and social mobilization, monitoring, communications research, and media management. Rotary International also provided communications and social mobilization along with funding and operational support. The WHO provided technical support for surveillance, supplementary immunization operations, monitoring and research.⁵¹ Local NGOs provided communications tools and personnel. The partnership was considered highly successful in providing program support without duplicating efforts. A similar cooperative structure is being developed to improve routine immunization.⁵²

Combined, the elements of India's polio elimination program engendered a substantial accomplishment that government officials say has provided confidence and pride to government health programs and local communities.⁵³ They say it also has fostered momentum toward improvements in other health programs, particularly routine immunization. Although noting that India still faces enormous challenges in improving water and sanitation and providing adequate health services, Deepak Kapur, chairman of Rotary International's PolioPlus program in India, said in an interview: "There is a newfound hope in immunization and in other health issues that the government and the partnership could deliver."⁵⁴ Focus on maintaining polio elimination and bolstering routine immunization is expected to continue with India's new government, elected in May 2014. Newly appointed Minister of Health and Family Welfare Harsh Vardhan has long been involved in the country's polio program and said he will prioritize polio surveillance, along with incidence reductions in measles and other diseases.⁵⁵

Efforts to harness the successful polio program for other health activities began even before India was declared polio free. The WHO already has moved polio staff to areas of the country that need the most help improving routine immunization systems.⁵⁶ Some Indian states have agreed to pay salaries for polio field volunteers who can contribute to other health improvements while the WHO continues to provide training, supervision, and oversight.⁵⁷ Further, the WHO itself is transferring some

⁵⁰ WHO, "Kosi Operation Plan, Bihar, India," updated June 2009, http://www.searo.who.int/india/topics/poliomyelitis/Kosi_Operational_Plan.pdf.

⁵¹ Bahl, "Polio Eradication in India, Key Factors Behind Success."

⁵² Ibid.

⁵³ Author communication with Anuradha Gupta, then additional secretary, Ministry of Health and Family Welfare, and mission director, National Health Mission, India, April 28, 2014; and Rakesh Kumar, joint secretary, Ministry of Health and Family Welfare, India, May 9, 2014.

⁵⁴ Author communication with Deepak Kapur, chairman, India National PolioPlus, Rotary International, April 30, 2014.

⁵⁵ Amitabh Bachchan, "Happy about Polio-Free Certification, Must Not Get Complacent: Health Minister," *F. India*, July 28, 2014, <http://www.firstpost.com/india/happy-polio-free-certification-must-get-complacent-health-minister-1637733.html>.

⁵⁶ Bahl, "Polio Eradication in India, Key Factors Behind Success."

⁵⁷ Author communication with Nata Menabde, WHO representative, India, April 30, 2014.

staff now paid for by the GPEI to the regular WHO budget.⁵⁸ The transition of resources is outlined in the WHO's Country Cooperation Strategy (CCS) with India, which emphasizes broadening the scope of disease-specific programs in the country including those related to polio, AIDS, and tuberculosis. The CCS calls for transitioning WHO service delivery components in the programs to the government.⁵⁹

In addition, India and its international polio partners began training NPSF staff to conduct measles surveillance starting in 2005 in the state of Tamil Nadu.⁶⁰ Since then, all 35 states and territories have begun or completed training to incorporate measles into the polio surveillance system. India began enhancing its measles vaccination program in 2010 and in 2013 joined other countries in the region in a pledge to eliminate measles by 2020, an effort that will involve improving routine immunization systems and disease surveillance.⁶¹ The effort appears to be making an impact: WHO data show a drop in measles cases from 56,188 in 2009 to 13,822 in 2013.⁶²

Even with contributions from polio eradication resources, there is still a long way to go in improving childhood immunizations in India, especially in the poorer areas. Immunization rates, while high in some states in the country, are distressingly low in others. In the state of Goa, for example, nearly 90 percent of children are fully immunized whereas in Arunachal Pradesh state the rate is 25 percent.⁶³ Providing vaccines for diseases other than polio—nearly all of which require an injection—depends on more highly trained personnel, improved cold chains that can keep vaccines at a variety of temperatures other than those required for polio drops, and different sets of supplies, including needles and needle disposal systems. Possible reactions to the vaccines must be explained to parents so they do not put off future vaccines if their child develops a post-vaccine fever. Parents must be convinced to bring their children to fixed sites rather than have the vaccinators come to them, and be willing to subject their children to multiple injections in a single visit.

Routine immunization requires building long-term systems that reach all children regularly and can bring in new vaccines when they become available. By contrast, “polio is a campaign mode. You have to get 2 million vaccinators out on one day, get a whole bunch of children vaccinated in single day,” said Ramanan Laxminarayan, vice president for research and policy at the Public Health Foundation of India. “That’s a different game than getting 27 million children [the number of children born in India

⁵⁸ Ibid.

⁵⁹ WHO, *WHO Country Cooperation Strategy, India: 2012–2017* (New Delhi: WHO, 2012), 41–42, http://www.who.int/countryfocus/cooperation_strategy/ccs_ind_en.pdf.

⁶⁰ Author communication with Jeffrey McFarland, medical epidemiologist, Centers for Disease Control and Prevention, July 30, 2014.

⁶¹ “India Sets Measles Elimination Goal—11 Countries Pledge to Eradicate Disease by 2020 at WHO Meet,” *The Telegraph* (Calcutta), September 15, 2013, http://www.telegraphindia.com/1130916/jsp/nation/story_17354534.jsp#.U9qSL_LD8dU.

⁶² WHO, “Table 1: Reported Measles by Country, 2001–2013,” *Vaccine Preventable Disease Surveillance Bulletin* 18, week 23 (June 9, 2014), http://www.searo.who.int/entity/immunization/data/ivd_week23_2014.pdf.

⁶³ National Health Mission, *Multi-Year Strategic Plan 2013-2017, Universal Immunization Program: Reaching Every Child*, Ministry of Health and Family Welfare, Government of India, January 2014, 58–59.

each year] six times in a year on specific dates. That requires a whole different level of skill and organization.”⁶⁴

A January 2014 Universal Immunization Program strategy plan developed by India’s Ministry of Health and Family Welfare calls for improvements in cold chain logistics, human resource capacity, vaccine procurement, data collection and analysis, and accountability mechanisms. Based on results of a 2009 survey that showed low coverage resulting from parents not understanding the importance of or even knowing about vaccines, the plan also cites the need for better social mobilization.⁶⁵

Further, while the government of India has made substantial efforts in recent years to improve access to health services, the health system is known for weak infrastructure, lack of accountability, and glaring resource inequities, particularly in the poorer states. As a result, there are concerns about some parts of India being able to continue high-quality versions of both the polio program and a vastly improved routine immunization system if and when participation from international partners begins to wane and as national and state governments assume more responsibility.

In addition, while the government is providing most of the funding for its polio program, the GPEI estimates India still will need \$45.78 million in external funding in 2014 for eradication-related activities, the fourth-highest level of any country.⁶⁶ While the Indian government has indicated it will continue to prioritize health, public health spending in India is only 1.3 percent of gross domestic product, among the lowest levels in the world.⁶⁷ Nonetheless, government officials say they have the funds to provide needed services, but call for continued technical assistance from international organizations.⁶⁸ A detailed plan developed through the polio legacy planning process could determine the role GPEI resources play in the Indian health system and what is needed in terms of funding and technical assistance to ensure needed services continue and expand.

Polio Eradication Donors and the Program’s Legacy

The GPEI has been supported by stalwart donors. Chief among them are the United States, the United Kingdom, Rotary International, the World Bank, and the Bill & Melinda Gates Foundation.⁶⁹ Budget needs for the program are expected to diminish after 2018. Polio legacy planning ensures continued resources for critical assets to guard against polio reemergence and continuation and expansion of other health activities now supported by polio eradication resources.

⁶⁴ Author communication with Ramanan Laxminarayan, Public Health Foundation of India, May 9, 2014.

⁶⁵ National Health Mission, *Multi-Year Strategic Plan 2013-2017, Universal Immunization Program*, 18.

⁶⁶ GPEI, *Financial Resource Requirements 2013–2018, As of 1 February 2014* (Geneva: WHO, February 2014), 23, http://www.polioeradication.org/Portals/0/Document/Financing/FRR_EN_A4.pdf.

⁶⁷ World Bank, “Health Expenditure, Public (% of GDP),” 2014, <http://data.worldbank.org/indicator/SH.XPD.PUBL.ZS>.

⁶⁸ Author communication with Anuradha Gupta, then-additional secretary, Ministry of Health and Family Welfare, and mission director, National Health Mission, India, April 28, 2014; and Rakesh Kumar, joint secretary, Ministry of Health and Family Welfare, India, May 9, 2014.

⁶⁹ GPEI, “Donor Contributions,” 2014, <http://www.polioeradication.org/Financing/Donorcontributions.aspx>.

While donors remain resolutely focused on the goal of polio eradication, several are beginning to think about how they might use their money later, but uncertainty lies ahead. Rotary International, which was instrumental in galvanizing national, international, and local support for global polio eradication, has committed funding to support the 107 Block Plan workers in India for an additional year, but the service organization has yet to decide on its involvement with other social and health improvement campaigns.⁷⁰ In the meantime, local Rotary chapters in India and elsewhere are already involved in improving routine immunization programs.⁷¹

U.S. support for polio eradication continues to be strong, driven by long-time congressional and White House commitment to the goal and continued advocacy from eradication supporters like Rotary International, the United Nations Foundation, and the Gates Foundation. Given congressional appropriators' year-by-year budget processes and the vagaries of Washington politics, it is difficult to predict if current U.S. government polio funding will in the future be used for other global health goals. However, immunization strengthening and global disease control both are U.S. global health priorities that could be bolstered by repurposing polio resources.

The Gates Foundation is funding polio legacy planning activities but it too has yet to decide on a future course for polio eradication funding after 2018. While the foundation plans to support transitioning polio resources to government health programs, exactly how that process will evolve will depend on the production of concrete data and detailed plans from countries.⁷² In the meantime, the foundation is supporting several countries' efforts to strengthen routine immunization through the polio eradication program, including those in Nigeria, Democratic Republic of the Congo, Chad, and India.⁷³

The World Bank has made the strongest public commitment to polio legacy activities. It has said it will work with governments and partners to strengthen health systems and routine immunization; respond to country requests for support to apply GPEI best practices to strengthen health systems; and work with countries to develop alternative sustainable immunization financing scenarios.⁷⁴ However, Tim Evans, senior director for Health, Nutrition and Population at the Bank, specified in a blog that planning should not be taken over by international organizations or donors. "Our partner countries need to lead in this legacy planning effort, articulating the best match between their needs and the array of assets the GPEI has to offer," he wrote.⁷⁵ He also said that while considering lessons learned from the polio program, countries should avoid some of its "inefficiencies." He included among those the assignment of a large number of staff to a single health campaign without understanding the effects of that

⁷⁰ Author communication with Carol Pandak, director, Rotary International PolioPlus, April 10, 2014.

⁷¹ Author communication with Deepak Kapur, chairman, India National PolioPlus, Rotary International, April 30, 2014.

⁷² Author communication with Lea Hegg, program officer, Bill & Melinda Gates Foundation, June 25, 2014.

⁷³ National Primary Healthcare Development Agency, "The Polio Eradication Programme: Bringing Better Health to Northern Nigerian Communities," May 2014, <http://nphcda.org/wp-content/uploads/2014/05/polioNIGERIA11-A4light.pdf>; and author communication with Lea Hegg, Gates Foundation, June 25, 2014.

⁷⁴ Tim Evans, "Polio's End Game," *Investing in Health* (World Bank blog), October 24, 2013, <http://blogs.worldbank.org/health/polio-s-end-game>.

⁷⁵ *Ibid.*

action on other health services. He also urged critical examination of the effects of centralized decisionmaking on flexibility and innovation at the local level.⁷⁶

Repurposing Polio Eradication’s Took Kit: The U.S. Government Role

The Global Polio Eradication Initiative has generated a number of high-quality systems and innovations. While those resources must be used to continue the drive toward eradication, they could also benefit a variety of other health improvement activities. The GPEI is taking the important first step of cataloging its assets and aiding governments in developing plans for an orderly transition to country health systems and other initiatives.

The U.S. government has been a staunch supporter of polio eradication since its inception. It has devoted more than \$2 billion to the cause,⁷⁷ largely for polio vaccine and to support technical assistance through CDC and USAID. It has been instrumental in the development of critical eradication resources including the Global Polio Laboratory Network, social communications networks, and salary support for key GPEI personnel.

While the ultimate trajectory of global polio eradication remains uncertain, and funding and attention must remain focused on polio eradication at least through 2018, beginning to plan now for longer-term support of useful resources will make it less likely that important global health assets dissipate as the GPEI winds down. The U.S. government should be actively involved in the planning process through CDC and USAID. Further, relevant agencies should consider the following recommendations:

Recommendations for the U.S. Government

- Support the GPEI’s legacy planning efforts to help determine which polio eradication resources and programs are worth continuing and how to accomplish that goal. While some countries may be in a position to take on the bulk of activities themselves, the United States and others in the international community should ensure adequate financial and technical resources are available to ward against backsliding on polio elimination and to enhance other health accomplishments that could be bolstered by GPEI assets.
- Look for and support areas where country plans to continue using polio resources meshes with U.S. global health priorities including poliovirus elimination and containment, improvements in immunization coverage, measles and rubella elimination, and global disease detection and response.
- CDC, USAID, and the Department of Health and Human Services’ Office of Global Affairs should engage Congress on the potential for expanding U.S. global health capabilities through thoughtful transitioning of polio eradication resources to

⁷⁶ Ibid.

⁷⁷ GPEI, “Contributions and Pledges to the Global Polio Eradication Initiative, 1985–2018,” <http://www.polioeradication.org/Portals/0/Document/Financing/HistoricalContributions.pdf>.

other activities while ensuring the effort does not impact continued U.S. funding for polio eradication.

The GPEI and its partners have developed a strong set of public health resources and programs. Every effort should be made to determine which are likely to be most valuable and to support continuation and transfer of those resources to further other global health advances. As a principal driver of the polio eradication effort and the largest country donor to global health activities, the U.S. government should be an active participant in the polio legacy planning process and look for country-driven opportunities to use polio resources for other global health priorities.



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