

The U.S. Government and Global Polio Efforts

Key Facts

- Polio, a highly infectious and sometimes deadly disease that has plagued the world since ancient times, is now at its lowest levels ever, with 33 reported cases of wild poliovirus (WPV) in 2018.
- Since eradication efforts began in earnest 30 years ago (when cases numbered 350,000 annually), polio has been eliminated in more than 120 countries and remains endemic in only three.
- A global push for polio eradication by 2023 is underway. If polio is eradicated, it would only be the second time in history that a disease affecting humans has been eradicated.
- The U.S. government (U.S.) has been engaged in efforts to address polio for decades, as a partner in and the second largest donor to the Global Polio Eradication Initiative and as a supporter of developing countries' efforts.
- U.S. funding for polio is \$235 million in FY 2018, up from \$134 million in FY 2009; however, the current Administration has proposed reduced polio funding for FY 2019.

Global Situation

Polio, a highly infectious and sometimes deadly disease that has plagued the world since ancient times,⁴ is now at its lowest levels ever, and today, global polio efforts are focused on sustaining

efforts to eradicate the disease, which have already resulted in a 99.9% reduction in cases since 1988 (see Table 1). Progress against the disease has been made possible by the development and expanded use of effective vaccines, particularly the more easily administered and less expensive oral poliovirus vaccine, and mass immunization campaigns (see below).

A global push for polio eradication is underway.⁵ If polio is eradicated, it would only be the second time in history that a disease affecting humans has been eradicated (smallpox being the other),⁶ a “once-in-a-generation opportunity for global public health.”⁷

Year	WPV Cases	cVDPV Cases	Number of Endemic Countries
1988	350,000	--	125
2018	33 ²	103 ³	3 (Afghanistan, Nigeria, Pakistan)

NOTES: Achieving polio eradication means reaching 0 cases of WPV. WPV means wild poliovirus, and cVDPV means circulating vaccine-derived poliovirus. -- indicates number of cases not available.

Poliomyelitis (Polio): A disease affecting the central nervous system that is caused by infection with the poliovirus; it can lead to partial or full paralysis and sometimes death in a matter of hours. Survivors are often affected by post-polio syndrome, which causes progressive muscle weakness

and atrophy as well as fatigue. While there is no cure for polio, vaccination against the disease can prevent infection and its spread.

History

The development of effective vaccines against polio in the 1950s and 1960s led to their widespread use in many industrialized countries, including the United States, and resulted in the elimination of polio in a number of countries. These early successes suggested that global polio eradication (through the use of mass immunization campaigns) might be achievable.⁸ Soon thereafter, in 1988, the World Health Assembly launched the Global Polio Eradication Initiative (GPEI) – constituted as a public-private partnership led by national governments and spearheaded by the World Health Organization (WHO), Rotary International, the U.S. Centers for Disease Control and Prevention (CDC), the United Nations Children’s Fund (UNICEF), and the Bill & Melinda Gates Foundation – to work toward this goal.⁹ GPEI partners have invested approximately \$16.4 billion globally in eradicating the disease.¹⁰

In 2012, the World Health Assembly stated that successfully eradicating polio was a “programmatic emergency for global public health,” given ongoing challenges that threatened the gains that had already been made.¹¹ More recently, in 2014, the World Health Organization declared the continued spread of polio a “public health emergency of international concern” due to the global risks posed by the disease; under the International Health Regulations, this declaration required certain countries to heighten their efforts against polio.¹²

Impact

Since 1988, the global effort to interrupt transmission of **wild poliovirus (WPV, the cause of polio)** has seen successes and setbacks. The virus was gradually eliminated across the Americas (in 1994), the Western Pacific (in 2000), Europe (in 2002), and South-East Asia (in 2014).¹³ Still, in other regions, it remained endemic in some countries. Today, the virus continues to be endemic in three countries: Afghanistan, Nigeria, and Pakistan (see Table 1). In addition, polio-free countries must remain vigilant to prevent reintroduction of the virus, which can lead to re-establishment of polio transmission.¹⁴ Importation of the virus from another country is a continuing threat, with countries stretching across west Africa to central Africa to the Horn of Africa most often affected.¹⁵

Current efforts in endemic countries focus on interrupting transmission of the remaining two types of wild poliovirus: WPV 1 and WPV 3.¹⁶ (The other WPV type, WPV 2, was eliminated in 1999 and declared eradicated in 2015.¹⁷) In 1 of 200 persons infected with wild poliovirus, permanent paralysis (usually of the legs) occurs, and of these, 5-10% die when paralysis affects the respiratory muscles.¹⁸ The disease is most prevalent among underserved populations in developing countries, typically striking children under five who live in poverty and who lack access to clean water, good sanitation, immunization and other health services. Young children are more vulnerable to and disproportionately affected by polio.¹⁹

Interventions

Several strategies are important in preventing the spread of polio:

- ensuring high levels of **routine immunization coverage** (greater than 80%) among infants (children under one year old), including at least three doses of oral poliovirus vaccine (OPV);
- **mass immunization campaigns** through National Immunization Day campaigns or supplementary immunization activities (SIAs);
- heightened **poliovirus surveillance and lab capacity** to detect new cases and importations;²⁰ and
- **targeted campaigns** (“mop-up” campaigns) to respond to outbreaks in specific areas the virus is known or suspected to be circulating.²¹

Mass immunization, which is designed to complement the individual protection provided by routine immunization and build herd immunity,²² is intended to immunize children under five who have not been immunized or may only be partially protected, while also boosting the immunity of children who have been immunized. It is only through high levels of sustained herd immunity that virus transmission will stop. A large cadre of volunteers vaccinates thousands, and often millions, of children during these campaigns.

These four main strategies are supported by health worker training, communication campaigns, community outreach, engagement with community and religious leaders, new technological and scientific advances, technical assistance, sharing of best practices, and vaccine production efforts.

Vaccine Switch. Eventually, polio efforts will transition from using OPV to using only inactivated poliovirus vaccine (IPV) through a phased process over several years. Introducing IPV will help eliminate outbreaks caused by **circulating vaccine-derived polioviruses (cVDPV)** (see Table 1) and other VDPV, since OPV includes live, weakened poliovirus, while IPV does not.²³ A key step in this transition from OPV to IPV was making a “switch” from OPV that targets all three types of wild poliovirus to OPV that targets the remaining two types of wild poliovirus (WPV 1 and WPV 3). For most countries, this switch occurred beginning in April 2016, preceded by efforts to introduce at least one dose of IPV into routine immunizations in order to maintain immunity against WPV 2.²⁴

Challenges

Although polio vaccination is relatively inexpensive, challenges persist in delivering the vaccine to the most at-risk populations in endemic regions, as affected areas are often geographically remote and struggle with extreme poverty, conflict, and religious or other social barriers that hamper the ability of health care workers to reach all children who need to be vaccinated. Attacks on health care workers engaged in polio vaccination activities, most recently in Pakistan, have highlighted security concerns that threaten continued progress. To address some of these challenges, approaches have included:

- building political will among national and community leaders,

- mobilizing community support of sustained vaccination efforts,
- retaining public trust in the safety of the vaccine,
- ensuring vaccine supply,
- improving coordination among key players, and
- securing adequate financing.²⁵

Global Goals

With the *Global Polio Emergency Action Plan 2012-2013* and the subsequent *Polio Eradication and Endgame Strategic Plan, 2013-2018*, key public and private stakeholders agreed to redouble efforts in the remaining endemic countries and to adopt a strategic plan for attaining the goal of eradicating polio (specifically, WPV) by 2018 and for preparing for a post-polio world; however, a midterm review of progress, conducted in 2015, pushed the eradication goal date to 2019.²⁶ Most recently, leaders in polio eradication announced a new Strategic Plan is in development that will aim for eradication by 2023.²⁷ Still, polio stakeholders have begun to plan for a post-polio world,²⁸ which will require efforts to transition but maintain polio assets (e.g., polio surveillance systems), document lessons learned, and complete the task of eradication by addressing VDPV.

Polio eradication is also a major milestone in the Global Vaccine Action Plan 2011-2020,²⁹ which outlines a vision for delivering universal access to immunization by 2020 as part of the “Decade of Vaccines” effort,³⁰ as first called for by Bill and Melinda Gates in 2010.³¹ The Gates Foundation is also the largest contributor to the GPEI.³²

U.S. Government Efforts

The U.S. has long been a leader in supporting global polio eradication, with the Centers for Disease Control and Prevention (CDC) and the U.S. Agency for International Development (USAID) engaged in efforts to assist affected countries through bilateral activities as well as the GPEI. In recent years, growing international attention to progress made toward eradication has led the U.S. to emphasize the urgency of sustaining efforts until eradication is achieved and spurred U.S. involvement in new collaborations aimed at better reaching the areas and populations most affected by new cases. In 2009, President Obama launched a new joint effort with the Organization of Islamic Cooperation (an inter-governmental organization with 57 member-states spread over four continents) to eradicate polio globally, bringing high level support to efforts to counter the disease in endemic countries with large Muslim populations.³³ The resulting 2010 joint work plan aimed “to strengthen diplomatic advocacy, technical support and resource mobilization” on the part of the U.S. government and OIC member-states.³⁴

More recently, in April 2013, the U.S. government signed onto the *Polio Eradication and Endgame Strategic Plan, 2013-2018*, which included the global goal of eradicating polio and preparing for a post-polio world; global progress toward the milestones outlined in the Plan has most recently been evaluated

as part of a midterm review, which was completed in 2015.³⁵ Additionally, protecting children from polio by ensuring they are fully immunized is part of the U.S. government maternal and child health strategy.³⁶

Organization

CDC and USAID are the major implementing agencies for U.S. global polio efforts, with CDC serving as the U.S. lead agency. The Department of State and the National Institutes of Health (NIH) also play important roles in the U.S. response.

CDC

CDC's efforts focus on technical and financial assistance for efforts to interrupt WPV transmission. In addition to its polio surveillance expertise,³⁷ it offers field support through the deployment of public health professionals to polio-affected areas who support capacity building of surveillance and laboratory networks, immunization campaign planning and monitoring, social mobilization, and other activities.³⁸ In December 2011, CDC activated its Emergency Operations Center to "support the final push for polio eradication."³⁹

OTHER U.S. POLIO EFFORTS

USAID provides technical support to country partners in immunization campaign planning and implementation, social mobilization and communications efforts, and strengthening surveillance and monitoring systems.⁴⁰ The agency's early polio efforts focused on Latin America in the late 1980s and early 1990s, until the disease was eliminated in the region.⁴¹ Since 1996 it has supported and worked with the Global Polio Eradication Initiative.⁴² The **Department of State** supports U.S. efforts through diplomatic initiatives to engage political and community leaders in affected areas.⁴³ **NIH** and CDC efforts also focus on encouraging research into and adoption of new polio vaccines.

MULTILATERAL ENGAGEMENT

Additionally, the U.S. works closely with international institutions and other partners, including the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and Rotary International. It is also the second largest donor to the Global Polio Eradication Initiative, having contributed over \$3.3 billion since its launch in 1988.⁴⁴

Funding

Total U.S. funding for polio has risen from \$134 million in FY 2009 to \$235 million in FY 2018 (see Figure 1).⁴⁵ However, the current Administration has proposed reduced polio funding for FY 2019.

Most U.S. funding for polio is provided through CDC's global immunization program (more than 70% in FY 2018). Additional polio funding is provided under the maternal and child health (MCH) program at USAID. See the KFF [fact sheet](#) on U.S. MCH efforts.

Key Issues for the U.S.

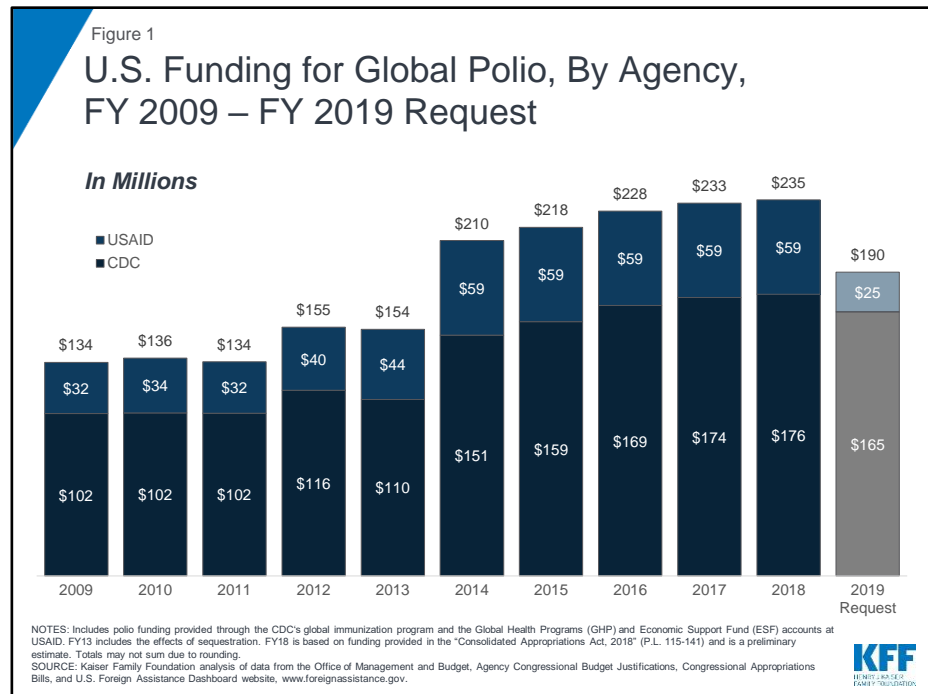
Increased attention to polio, when coupled with global partnerships and the availability of effective interventions, offer a unique opportunity to eradicate an infectious disease affecting humans for only the second time in history. However, with continued insecurity and difficulty accessing hard-to-reach areas in some of the remaining endemic areas and other ongoing

challenges, concerns about how to not only sustain gains made but also eliminate the final reservoirs of the poliovirus exist. Going forward, an overarching question is about the extent to which the current Administration will support global polio efforts, particularly in light of its proposal to reduce polio funding.

To achieve the vision of eradicating polio, securing adequate funding for the final stretch of the Global Polio Eradication Initiative will be important. Additionally, the challenge of tackling VDPV is significant; addressing it will require sustained support and resources even after eradication of WPV is achieved and particularly as efforts to secure a post-polio world get underway.

Endnotes

- ¹ GPEI: "Polio this week – As of 22 January 2019," webpage, <http://polioeradication.org/polio-today/polio-now/this-week/>; "Global wild poliovirus 2013-2018 as of 22 Jan. 2019," webpage, <http://polioeradication.org/polio-today/polio-now/wild-poliovirus-list/>; "Global Circulating Vaccine-Derived Poliovirus, as of 22 Jan. 2019," webpage, <http://polioeradication.org/polio-today/polio-now/this-week/circulating-vaccine-derived-poliovirus/>. WHO, "Poliomyelitis," fact sheet, Jan. 2019.
- ² In 2018, all of these cases occurred in endemic countries (21 in Afghanistan, 12 in Pakistan, and 0 in Nigeria).
- ³ In 2018, 69 of these cases occurred in non-endemic countries (26 in Papua New Guinea, 20 in the Democratic Republic of Congo, 13 in Somalia, 9 in Niger, and 1 in Mozambique), while 34 occurred in endemic countries (all 34 in Nigeria).
- ⁴ GPEI, "History of Polio," webpage, <http://polioeradication.org/polio-today/history-of-polio/>.
- ⁵ Certification of polio eradication occurs after a sustained period of time with no transmission of WPV. Detailed criteria are described at: GPEI, "Certification," webpage, <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/certification/>.
- ⁶ In 1980, the World Health Assembly (WHA) accepted scientific certification that smallpox had been eradicated worldwide. WHO, *The Global Eradication of Smallpox*, 1980. Guinea-worm disease (a neglected tropical disease also known as dracunculiasis) could become the second disease eradicated; cases dropped from 3.5 million annually in the mid-1980s to 30 in 2017. WHO, "Dracunculiasis (guinea-worm disease)," fact sheet, April 2018.
- ⁷ GPEI Independent Monitoring Board, "Letter to Margaret Chan dated Jan. 18, 2013," http://polioeradication.org/wp-content/uploads/2016/07/Letter_January2013_EN.pdf.
- ⁸ GPEI, "History of Polio," webpage, <http://polioeradication.org/polio-today/history-of-polio/>.



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- ⁹ 41st WHA, "Global eradication of poliomyelitis by the year 2000," WHA 41.28, 1988; GPEI, "Who We Are," webpage, <http://polioeradication.org/who-we-are/>.
- ¹⁰ Includes contributions and pledges through 2019. GPEI, "Contributions and Pledges to the Global Polio Eradication Initiative, 1985-2019," as of October 2018, <http://polioeradication.org/financing/donors/historical-contributions/>.
- ¹¹ 65th WHA, "Poliomyelitis: intensification of the global eradication initiative," WHA 65.5, 2012.
- ¹² WHO Executive Board, *Poliomyelitis*, Report by the Secretariat, EB136/21, Jan. 16, 2015; GPEI, "Public Health Emergency Status," webpage, <http://polioeradication.org/polio-today/polio-now/public-health-emergency-status/>.
- ¹³ These years represent the dates of regional certification of eradication. UNICEF, "The Story of the End of Polio," www.unicef.org/immunization/files/The_Story_of_the_End_of_Polio.pdf; GPEI, "WHO South-East Asia Region Declared Polio-Free," March 27, 2014, <http://polioeradication.org/news-post/who-south-east-asia-region-declared-polio-free/>.
- ¹⁴ Sustained poliovirus transmission for over 12 months following importation is classified as re-established transmission.
- ¹⁵ GPEI, "Where We Work," webpage, <http://polioeradication.org/where-we-work/>.
- ¹⁶ It has been more than five years since the last case of WPV3 was reported anywhere, leading to some hopes that this strain may soon be gone. However, the areas in which the strain may still persist without being reported are unstable security-wise, so undetected circulation has not been ruled out yet. GPEI, "A year without type 3," news release, Nov. 13, 2013, <http://polioeradication.org/news-post/a-year-without-type-3/>; GPEI, "Three Years With No World Poliovirus Type 3," news release, Nov. 10, 2015, <http://polioeradication.org/news-post/three-years-with-no-wild-poliovirus-type-3/>; WHO, "Wild Poliovirus 2012-2017," as of 31 Jan. 2017, http://polioeradication.org/wp-content/uploads/2016/08/WPV_2012-2017_31JAN17.pdf; WHO, "Poliomyelitis," fact sheet, March 2018; GPEI, "List of wild poliovirus by country and year: 7 Aug. 2018," webpage, <http://polioeradication.org/polio-today/polio-now/wild-poliovirus-list/>.
- ¹⁷ WHO, "Poliomyelitis," fact sheet no. 114, April 2016; Global Certification Commission, "Declaration of WPV2 Eradication," Sept. 20, 2015.
- ¹⁸ Most people infected with polio will have no symptoms, and those that do will usually experience minor symptoms that often resolve completely.
- ¹⁹ WHO, "Poliomyelitis," fact sheet no. 114, April 2013.
- ²⁰ Surveillance efforts include monitoring for cases of acute flaccid paralysis (AFP), an early sign of possible polio.
- ²¹ According to GPEI, "Priority areas include those where polio cases have been found over the previous three years and where access to health care is difficult. Other criteria include high population density, high population mobility, poor sanitation, and low routine immunization coverage." GPEI, "Targeted Mop-up Campaigns," webpage, <http://polioeradication.org/who-we-are/strategy/targeted-mop-up-campaigns/>.
- ²² Herd immunity is the resistance to an infectious agent of an entire group or community (and, in particular, protection of susceptible persons) as a result of a substantial proportion of the population being immune to the agent. See CDC, "Glossary of Epidemiology Terms," webpage, <http://www.cdc.gov/OPHSS/CSELS/DSEPD/SS1978/Glossary.html#immunityHerd>.
- ²³ Polio Oversight Board, "Polio Eradication in Reach, with Renewed Commitment," statement, Sept. 25, 2015. Also see GPEI, "Vaccine-Derived Polioviruses," webpage, <http://polioeradication.org/polio-today/polio-prevention/the-virus/vaccine-derived-polio-viruses/>; WHO, "What is vaccine-derived polio?," Online Q&A, April 2017, <http://www.who.int/features/qa/64/en/>; GPEI, "Vaccine-Derived Poliovirus," fact sheet, March 2017, http://polioeradication.org/wp-content/uploads/2016/07/GPEI-cVDPV-factsheet_March-2017.pdf.
- ²⁴ WHO/GPEI: "Planning for IPV Introduction: FAQs," March 2014; "Preparing for the withdrawal of all OPVs," OPV Switch Briefing Note, Feb. 2015. Olen Kew and Mark Pallansch, "Breaking the Last Chains of Poliovirus Transmission: Progress and Challenges in Global Polio Eradication," July 2018, *Annual Review of Virology* 2018: 5:7.1-7.25.
- ²⁵ The GPEI Independent Monitoring Board monitors progress toward GPEI milestones, examines key challenges, and makes recommendations accordingly; see <http://polioeradication.org/who-we-are/governance/independent-monitoring-board/>.
- ²⁶ GPEI: *Global Polio Emergency Action Plan 2012-2013*, 2012; *Polio Eradication and Endgame Strategic Plan, 2013-2018*, April 2013; Midterm Review, July 2015.
- ²⁷ GPEI, "'To Succeed by 2023'- Extraordinary Joint Statement to Polio Eradicators," Jan. 23, 2019, <http://polioeradication.org/news-post/to-succeed-by-2023-extraordinary-joint-statement-to-polio-eradicators/>.
- ²⁸ GPEI, *Polio Post-Certification Strategy: A risk mitigation strategy for a polio-free world*, 2018, <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/transition-planning/polio-post-certification-strategy/>; WHO, *Polio transition planning, Report by the Director-General*, EB142/11, Jan 12, 2018, http://apps.who.int/gb/ebwha/pdf_files/EB142/B142_11-en.pdf; WHO, *Polio transition and post-certification, Draft strategic action plan on polio transition, Report by the Director-General*, A71/9, April 24, 2018, http://apps.who.int/gb/ebwha/pdf_files/WHA71/A71_9-en.pdf.
- ²⁹ WHO, *Global Vaccine Action Plan 2011-2020*, http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/.
- ³⁰ The secretariat for the Decade of Vaccines Collaboration dissolved in 2012 after the *Global Vaccine Action Plan* was developed, with the aim that partners' efforts in support of the plan and global immunization efforts would continue. Decade of Vaccines Collaboration, website, www.dovcollaboration.org/.

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- ³¹ The Decade of Vaccines Collaboration grew out of Bill and Melinda Gates' initial call for the next ten years to focus on helping "to research, develop, and deliver vaccines for the world's poorest countries." See Gates Foundation, media release, 2010, [www.gatesfoundation.org/Media-Center/Press-Releases/2010/01/Bill-and-Melinda-Gates-Pledge-\\$10-Billion-in-Call-for-Decade-of-Vaccines](http://www.gatesfoundation.org/Media-Center/Press-Releases/2010/01/Bill-and-Melinda-Gates-Pledge-$10-Billion-in-Call-for-Decade-of-Vaccines) and www.gatesfoundation.org/Media-Center/Press-Releases/2010/12/Global-Health-Leaders-Launch-Decade-of-Vaccines-Collaboration.
- ³² KFF analysis of funding based on data in GPEI, "Contributions and Pledges to the Global Polio Eradication Initiative, 1985-2019," as of October 2018, <http://polioeradication.org/financing/donors/historical-contributions/>.
- ³³ Formerly known as the Organization of the Islamic Conference. Obama Administration/White House, "Remarks by the President on a New Beginning," June 4, 2009, <https://obamawhitehouse.archives.gov/the-press-office/remarks-president-cairo-university-6-04-09>.
- ³⁴ Obama Administration/State Department, "United States Support for Polio Eradication," fact sheet, Oct. 7, 2010, <https://2009-2017.state.gov/e/oes/rls/fs/2010/149227.htm>.
- ³⁵ The global goal of the *Strategic Plan* "is to complete the eradication and containment of all wild, vaccine-related and Sabin polioviruses, such that no child ever again suffers paralytic poliomyelitis." GPEI: *Polio Eradication and Endgame Strategic Plan*, 2013-18, April 2013; *Midterm Review*, July 2015.
- ³⁶ USAID: *Acting on the Call: Ending Preventable Child and Maternal Deaths*, June 2014; *Ending Preventable Maternal Mortality: USAID Maternal Health Vision for Action*, June 2014; *Working Toward the Goal of Reducing Maternal and Child Mortality: USAID Programming and Response to FY08 Appropriations (Report to Congress)*, July 2008; *Two Decades of Progress: USAID's Child Survival and Maternal Health Program*, June 2009.
- ³⁷ CDC provides virological surveillance expertise (genetic fingerprinting) to investigate polio cases, identify the strain of poliovirus involved, and pinpoint genetic and transmission linkages. KFF communication with CDC, May 2013.
- ³⁸ CDC, "Polio," webpage, www.cdc.gov/polio/.
- ³⁹ CDC, *CDC Global Health Strategy, 2012-2015*, 2012.
- ⁴⁰ USAID, *Global Health and Child Survival: Progress Report to Congress, 2010-2011*, 2012; USAID, "Support to Polio Eradication Activities," fact sheet, Aug. 3, 2015, <https://www.usaid.gov/news-information/fact-sheets/support-polio-eradication-activities>.
- ⁴¹ The last case in Latin America occurred in 1991, and the region was certified polio-free in 1994.
- ⁴² USAID, *Polio Eradication Initiative Mission Information Kit*, 1999.
- ⁴³ Obama Administration/State Department, "United States Support for Polio Eradication," fact sheet, Oct. 7, 2010, <https://2009-2017.state.gov/e/oes/rls/fs/2010/149227.htm>.
- ⁴⁴ KFF analysis of funding based on data in GPEI, "Contributions and Pledges to the Global Polio Eradication Initiative, 1985-2019," as of October 2018, <http://polioeradication.org/financing/donors/historical-contributions/> and data from the Office of Management and Budget, Agency Congressional Budget Justifications, Congressional Appropriations Bills, and U.S. Foreign Assistance Dashboard website, ForeignAssistance.gov.
- ⁴⁵ The U.S. government provided support for polio activities prior to FY09; however, total funding amounts are not available. KFF analysis of data from the Office of Management and Budget, Agency Congressional Budget Justifications, Congressional Appropriations Bills, and U.S. Foreign Assistance Dashboard website, ForeignAssistance.gov.