

# Polio Eradication in India: The Lessons Learned

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India completed a full 5 years as a “polio-free nation” on January 13, 2016.<sup>1</sup> It was a remarkable feat considering the odds against achieving this status. The Global Polio Eradication Initiative (GPEI) considered India to be the most difficult region of the world to eliminate wild polio virus (WPV) transmission and then maintain that status for 5 years. Significantly, India borders on Pakistan, which is still experiencing intense WPV circulation.<sup>2</sup> India’s progress in becoming polio-free was a great confidence booster for all the stakeholders of the GPEI. The many lessons learned during this arduous exercise are helping strategists, program managers, and health workers of other countries still grappling with uninterrupted WPV transmission.

## THE CHALLENGES

India, a vastly diverse country with a 27 million birth cohort, undertook the largest vaccination drive against WPV in the world. With high population density, poor civic infrastructure, poor sanitation, an almost nonexistent public health system, rampant malnutrition and diarrhea, difficult-to-reach locales, high population mobility, and extremely high force of WPV transmission in few states,<sup>3</sup> the interruption of WPV transmission was extremely difficult and demanding. The interplay of these challenging

factors provided a perfect milieu for the WPV to circulate, and the prospect of achieving zero-polio status seemed insurmountable. Eradication efforts were plagued by low coverage and poor monitoring of routine immunization and supplementary immunization activities. In addition, there was community fatigue and extremely low efficacy of trivalent oral polio vaccine (OPV) in Uttar Pradesh and Bihar, the 2 most populous northern states of the country.<sup>4,5</sup> There was also resistance to immunization drives owing to negative rumors about the safety of OPV. It is no wonder that India was the last country to achieve polio-free status in the entire South East Asian region.<sup>3</sup>

## THE INDIAN SAGA OF POLIO ERADICATION

India’s progress toward polio eradication was tumultuous. Although WPV type 2 was eradicated in 1999, the other 2 types of WPVs continued to circulate intensively with cyclic pattern of outbreaks until 2009.<sup>3,4</sup> The supplementary immunization activities were initiated as National Immunization Days in 1995.<sup>3</sup> These were the mainstay of polio immunization activities for rapidly enhancing population immunity against WPV against a backdrop of low routine immunization rates. House-to-house vaccination drives were



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held to vaccinate those children who were not covered by the fixed sites vaccination during supplementary immunization activities.<sup>4</sup> Acute flaccid paralysis surveillance in India was strengthened, and it achieved a desired nonpolio acute flaccid paralysis rate of >2 per 100 000 in almost all the states. Introduction of “environmental surveillance” further bolstered ongoing testing of sewage samples at 6 sites across the country to alert program managers of any silent WPV transmission.<sup>3</sup> Certain innovative strategies such as “transit vaccination,” in which OPV was administered to mobile and transitory populations, were introduced.<sup>3,4</sup> Also, an “underserved strategy” was introduced in high-risk endemic areas to reach marginalized sections of the society.<sup>4</sup>

As a result of intensive polio immunization activities after 2004 that included supplementary immunization activities, sometimes as often as 10 times a year, virtually every child was tracked and vaccinated.<sup>4</sup> However, many children developed polio despite receiving 15 doses of trivalent OPV.<sup>4</sup> Introduction of “newer” OPVs, including monovalent OPV type 1 and type 3 and bivalent OPV types 1 and 3 had a greater impact on WPV transmission in endemic regions.<sup>4</sup>

### THE KEY FACTORS BEHIND SUCCESS

Unprecedented government ownership and commitment toward this mass health initiative were key to success. The government of India provided financial sustainability to the ongoing program and made annual budgetary allocations to the GPEI after initial funding from the global agencies. Any shortage of funds was addressed by the government. The Prime Minister’s Office directly supervised and periodically reviewed the performance of the program. The India Expert Advisory Group for polio

eradication was formed, and regular annual meetings were organized to guide ongoing and future activities. The private sector, including representatives from civil society organizations, academic bodies, and independent polio experts were included in this technical group.

Even the states were proactive in taking ownership of eradication programs, with chief ministers of key endemic states taking charge of ongoing polio eradication programs in their own states. The cabinet secretaries were instructed to directly coordinate and review the program implementation with monthly video conferencing with district authorities. A District Task Force was formed in every district, and monthly task force meetings were conducted under leadership of the District Magistrate to review ongoing polio activities.

The private sector played a major role in India’s victory over polio. Members of Rotary International participated actively during Supplementary immunization activities. In addition to providing financial support to the GPEI, they also contributed significantly in social mobilization campaigns. Religious leaders, mainly from the Muslim community, actively helped to coordinate the government’s efforts to mitigate resistance to OPV administration within the Muslim community. Academic bodies such as the Indian Academy of Pediatrics and the Indian Medical Association, along with other agencies, also conducted awareness camps to educate the community about misconceptions regarding polio vaccines. Many film personalities were enlisted to support the polio campaigns and strengthen social mobilization efforts of the agencies.

### LESSONS LEARNED

India’s triumph over polio is replete with lessons to be learned. Lessons

can be broadly categorized as government ownership, innovations in program delivery, technical advances, building partnerships with private and social sectors, and massive social mobilization. A sound, multipronged communication strategy is essential to galvanize the entire population to achieve public ownership rather than just creating a government-driven program.<sup>6</sup> However, government ownership of the initiative at all levels of governance, absolute accountability, meticulous microplanning, and real-time monitoring and review of the ongoing program were the main reasons behind India’s success against polio. Technical advances that included identification of suboptimal efficacy of trivalent OPV in some highly endemic states and subsequent deployment of highly potent monovalent and bivalent OPVs in the program also proved to be real game changers.<sup>4</sup> Although a bit late in the polio eradication effort, periodic evaluation and research helped to ensure the program’s success.

Some simple program interventions improved overall performance. Novel yet simple measures such as finger marking, inclusion of female staff in the vaccinators team, “bindi marking” to denote number of under 5 children in the household, newborn tracking, and mapping missed children greatly facilitated OPV delivery. The Indian experience proved that building partnerships with the private sector, along with involvement of socioreligious leaders and celebrities, were key interventions needed to tackle social resistance against a mass public health campaign.<sup>7</sup>

Finally, the lessons learned in India’s success story against polio have helped GPEI restructure their Polio Eradication and Endgame Strategic Plan<sup>8</sup>. Limited trivalent OPV efficacy in this region informed the GPEI efforts to bolster OPV campaigns with incorporation of IPV during

the preeradication stages in the remaining endemic countries.

#### ABBREVIATIONS

GPEI: Global Polio Eradication Initiative

OPV: oral polio vaccine

WPV: wild polio virus

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