

Polio Eradication in Pakistan: Call for Alliance

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In many countries, polio is a disease of the past, and people recall its eradication as one of mankind's greatest triumphs over viruses. However, poliomyelitis is still a menace in Pakistan, with the most recent case—of a 5-year-old boy from Sindh—reported on March 26, 2016.¹ Pakistan, home to wild poliovirus (WPV) serotypes 1 and 3, is the last reservoir of WPV serotype 3 in Asia.

Poliovirus, an enterovirus belonging to the family *Picornaviridae*, only infects humans, principally children <5 years. It is contagious and spreads via person-to-person contact. The virus lives in an infected person's throat and intestines and is transmitted primarily through the oral-fecal route and less commonly through respiratory droplets.² The virus invades lymphoid tissue, enters the bloodstream, and infects cells of the central nervous system. Replication of poliovirus in motor neurons of the anterior horn and brain stem results in cell destruction and the typical manifestations of poliomyelitis.

Polio can cause paralysis, limb deformities, breathing problems, and even death. In the majority of polio victims, the disease is self-limiting and has prodromal symptoms; however, in 38% of infected people, its manifestations include serious symptoms such as paresthesia, meningitis, and paralysis. One in 200 infections leads to irreversible paralysis, usually in the legs.^{2,4}

Poliomyelitis can be completely prevented by vaccinating and providing immunity to the population at large. A live but weakened (attenuated) oral polio vaccine (OPV) and an inactivated polio vaccine (IPV) are available.^{4,5}

The World Health Organization (WHO), in collaboration with various health agencies, started the Global Polio Eradication Initiative in 1988, and the number of polio cases across the globe decreased from 350,000 in 1988 to 1,643 in 2009. In 2008, cases of polio were limited to Afghanistan, Nigeria, India, and Pakistan. However, India and Nigeria have since been removed from the polio endemic list.^{6,7} On a global level, 30 WPV and 9 circulating vaccine-derived polio virus (cVDPV) cases were reported in 2015. Among these, all 30 WPV and 1 of the cVDPV cases were reported in polio endemic countries, whereas 8 cVDPV cases were reported in nonendemic countries.⁸

In 1994, the Expanded Program on Immunization, a program initiated by the WHO to make vaccines accessible to all children, developed a strategy to eradicate polio in Pakistan by the end of 2005. As a result, the number of polio

cases reported in Pakistan has decreased significantly, and the disease has been eliminated in some provinces. By mid 2016, a total of 13 cases had been reported, 4 in Sindh province, 7 in Khyber Pakhtunkhwa province, 1 in Balochistan province, and 1 in federally administered tribal areas (FATAs). This total is a definite improvement over 2014, when 306 cases were reported, with the majority in the FATAs (179 cases).⁹ In 2015, Pakistan had 53 reported cases of polio, still the highest number for any country.¹⁰ During the past 3 decades, Pakistan has faced a number of challenges to the goal of eradicating polio: terrorism, misconceptions about the polio vaccine, religious misinterpretations, security threats to the vaccinators, lack of awareness, inaccessibility, and inefficient vaccines.^{2,3}

Militant organizations are a significant issue in polio eradication in Pakistan and caused the derailment of the WHO polio eradication program in the country.¹¹ Militant organizations were responsible for imposing a ban on the polio vaccination campaign in FATA regions, which are under their control, and they threatened the polio vaccinators.³ Militants have also spread conspiracy theories about the polio vaccination. The 4 areas affected by polio in Pakistan are Karachi, Quetta, the FATAs, and Peshawar district in Khyber Pakhtunkhwa. The persistence of ineffective antipolio campaigns is a result of the low socioeconomic and educational background of the inhabitants in these areas, the lack of awareness about disease prevention, and the misinformation propagated by local influential people. More than 40,000 parents refuse to dispense the vaccine to their children in the FATAs and in Khyber Pakhtunkhwa.³ A large portion of the population believes that the polio vaccine contains banned ingredients such as monkey fecal matter and pig fat, considered unlawful in Islam. In addition, a popular belief in Pakistan is that the vaccine induces infertility.^{2,3} Moreover, polio workers and immunization campaign staff have been kidnapped, mishandled, and assassinated.¹¹ More than 50 vaccinators were killed in 2013 and 2014.⁶ Seven police officers guarding polio workers were killed on April 20, 2016.¹² This hostility places Pakistan's polio eradication efforts in great jeopardy.

To continue the fight to eradicate poliovirus, the surveillance for new cases should not stop, and healthcare service providers should be trained to communicate with the local populations in a way that promotes understanding. Improved communication may help make the immunization program more effective and change the mindset of the

*Degree in progress.

population toward the vaccine.¹³ Furthermore, influential people of the country such as politicians, public figures, and religious leaders should be provided with accurate knowledge and statistics about poliovirus and be encouraged to adopt the roles of mentors and motivators in the public sector.

Religious scholars have taken a responsible position by declaring polio drops lawful under Islamic law.^{3,14} The Institute for Research and Development in Swat has said that 160 religious scholars have issued a *fatwa*—a ruling on a point of Islamic law by a recognized authority—in favor of the polio vaccination, declaring it to be legal and pure.¹⁴

The role of social media cannot be ignored in public health education and awareness of prevention. Social media can be used to showcase the achievements of the polio eradication campaign and help eliminate taboos and false beliefs regarding the vaccine. Media campaigns would truly help the campaigners and volunteers to gain moral support and social encouragement.²

Failures in Pakistan's polio elimination campaigns have complicated the global scenario for a polio-free world. According to the WHO, Pakistan is responsible for most of the polio cases recorded globally.³ As a result, the WHO imposed strict travel limitations to stop the possible spread of poliovirus from Pakistan to other countries. Cases of polio in China and Egypt were linked to the poliovirus strain endemic to Pakistan. The eradication of polio in Pakistan is crucial to make the world free of polio. People traveling within the country should be screened for immunity against polio, and travel restrictions should be applied within provinces that have a high incidence of poliovirus so that polio can be restricted to areas that could be easily targeted for effective campaigns and elimination of the disease.³

The potential effectiveness of a vigorous polio vaccination campaign cannot be ignored. The incidence of reported polio cases in Pakistan dropped by 70% in 2015 when the United Arab Emirates (UAE) helped vaccinate >10 million Pakistani children as part of the UAE polio campaign and the UAE Pakistan Assistance Program that provided humanitarian support to Pakistan.^{15,16}

However, the responsibility of the Pakistani government should expand beyond simply permitting vaccination campaigns. Our government should collaborate with health-care agencies to set up polio vaccination booths at various government offices such as the National Database and Registration Authority (NADRA), the agency responsible for establishing a new registration system for the whole population of Pakistan. Polio vaccination should be made compulsory to create a B-Form, the NADRA child registration certificate that is used to register individuals <18 years of age. Polio vaccination should also be made compulsory to generate a national identity card, issued to every citizen of Pakistan >18 years of age. Hence, we recommend that polio vaccination should be a part of state policy.

Another approach that can be adopted is to hire more local female health workers because they can conduct polio campaigns more efficiently in Pashtun communities where prevalence of noncompliance is high. Female health workers would be able to reach a large audience of females

and children that males could not reach because of religious beliefs.

The Pakistani government has empowered military forces to deal with the hostility against polio workers. The people responsible for killing the polio workers have been arrested.¹⁶

With an extensive vaccination program, government health policies, and disease education and awareness, we hope Pakistan can eradicate polio by 2018.¹⁷

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