
Facing the Challenges of Polio Eradication in Nigeria

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ABSTRACT

The global polio eradication initiative (GPEI)—an international partnership of government and private institutions—has reduced the burden of polio worldwide by more than 99 percent. However, polio remains endemic in Afghanistan, India, Nigeria and Pakistan. In the past few years, Nigeria made some giant strides in polio eradication efforts. There are some obstacles to be surmounted. Controversies based on unfounded rumors about alleged adverse health effects, vaccine safety, contamination with anti-fertility drugs and virus that causes HIV/AIDS; overdose as well as promotion of anti OPV sentiments by political and religious opinion leaders led to a noticeable decline in vaccine acceptance. The security challenge in the northern part of the country has put the polio eradication at risk. The federal, state governments and other stakeholders should regard the eradication of polio as a national public health emergency. Misinformation and controversy surrounding this campaign should be squarely addressed through robust public enlightenment campaign, targeting marginalized communities with information on the importance of vaccination and to respond directly to their expressed concerns.

Keywords: *Nigeria, Polio, Eradication, and Challenges.*

INTRODUCTION

Poliomyelitis, polio, or infantile paralysis is caused by the polio virus, a member of the family *picornaviridae*. The polio virus is a naked, positive-strand RNA virus with three different serotypes — P1, P2, and P3. The virus is very stable especially at acidic pH and can remain infectious for relatively

long periods in food and water. Transmission is through the fecal-oral route. The average incubation period is 6 to 20 days. Once ingested, the virus multiplies in the mucosa of the throat and/or small intestine. From these sites, the virus invades the tonsils and lymph nodes of the neck and terminal portion of the small intestine.

Generally, there are either no symptoms or a brief illness characterized by fever, headache, sore-throat, vomiting and loss of appetite. The virus sometimes enters the bloodstream and causes a viremia. In most cases (more than 99%), the viremia is transient and clinical disease does not result. In the minority of the cases (less than 1%), the viremia persists and the virus enters the central nervous system and causes paralytic polio. The virus has a high affinity for anterior horn motor nerve cells of the spinal cord. Once inside these cells, it multiplies and destroys the cells, thus results in motor and muscle paralysis (Willey *et al.*, 2008).

Clinical Findings: The range of responses to polio virus infection includes:

1. In-apparent, asymptomatic infection.
2. Abortive poliomyelitis.
3. Non-paralytic poliomyelitis.
4. Paralytic poliomyelitis.

Prevention: Poliomyelitis can be prevented by both the killed vaccine (Salk vaccine, inactivated vaccine, IPV) and live, attenuated vaccine (Sabin vaccine, oral vaccine, OPV). Both vaccines induce hormonal antibodies which neutralize virus entering the blood and hence prevent central nervous system infection and disease.

Advantages of live vaccine

1. It interrupts fecal-oral transmission by inducing secretory IgA in the gastrointestinal tract. IgA is induced by the live virus because it replicates in the gastrointestinal tract, whereas the killed vaccine does not.
2. It is given orally and so it is more readily accepted than the killed vaccine which must be injected (Levinson and Jawetz, 2000).

Disadvantages of the vaccine

1. Rarely reversion of the attenuated virus to virulence will occur and disease may ensue (especially for the type 3 virus).
2. It can cause disease in immunodeficient persons and therefore should not be given to them.
3. Infection of the gastrointestinal tract by other enteroviruses can limit replication of the vaccine virus and reduce protection.
4. It must be kept refrigerated to prevent heat inactivation of the live virus (Levinson and Jawetz, 2000).

CHALLENGES

The number of reported polio cases worldwide has been significantly reduced by more than 99 percent

(from 350,000 new cases in 1988 to 627 in 2011) through the efforts of the Global Polio Eradication Initiative (GPEI). GPEI is a large public health initiative organized by World Health Organization (WHO), Rotary International, the US Centers for Disease Control and Prevention (CDC) and the United Nations Children's Fund (UNICEF). Other leading partners include the United States Agency for International Development (USAID), the Bill and Melinda Gates Foundation, governments of polio-affected countries, donor agencies, non-governmental, and private sector organizations (CDC, 2010; GPEI, 2011). Since 1988, the initiative seeks to end polio worldwide through routine immunization of at least 80% of children under one year old with a minimum of three doses of oral polio vaccine, supplementary vaccine doses for children under five, enhanced surveillance of and reporting on children under the age of 15, and more targeted campaigns for high-risk areas. The campaign has made significant progress against the virus. However, polio is still endemic in Afghanistan, India, Nigeria and Pakistan (WHO, 2009). The snag is getting rid of the last 1% of cases over the past decade. A lot of challenges have been encountered. Logistical barriers especially in conflict areas, management

challenges, uncertain funding, waning political will, persisting anti-vaccine rumors and resistance, silent infections—healthy carriers who spread disease, and rare cases of vaccine-induced polio (Larson and Ghinai, 2011).

Nigeria currently poses the highest risk to the interruption of polio virus circulation and global target for eradication. In 2003, Nigeria had the highest number of polio cases anywhere in the world (cumulative total of 302 as at January, 2004), and accounted for 45% of all confirmed cases globally. Intense transmission of wild polio virus (WPV) continues in northern Nigeria especially Kano state accounting for 47% of all cases. Unfortunately also, there has been a 25% increase in the number of cases of wild polio virus with at least a confirmed case in 15 states (Akande and Akande, 2006).

Political and religious factors have played significant role in undermining Nigeria's effort at polio eradication especially in the northern part of the country. Five northern states: Kano, Zamfara, Kaduna, Niger and Bauchi boycotted polio eradication when religious and political leaders endorsed rumors that oral polio vaccine was an American conspiracy to spread HIV and cause infertility. The rumors had circulated in Nigeria

and elsewhere for many years but the tense political situation following elections in April 2003 provided motives for state governments in the north to antagonize the federal government (Kaufmann and Feldbaum, 2009). This happened against a background of court proceedings in the United States where Nigerian families were suing Pfizer for alleged unethical practice during clinical trials of an antibiotic drug in Kano (Yahya, 2006).

In most Nigerian states, the vaccine suspensions were short-lived but the newly elected governor of Kano enforced the boycott for 11 months. This catalyzed a resurgence of polio in the country with more than five times the number of cases in 2006 than in 2002 (reported incidence jumped from 202 in 2002 to 1,143 in 2006). Nigerian strains of the virus spread to 15 other countries (CDC, 2009) many of which had been previously certified polio-free and were detected as far away as Indonesia (Larson and Ghinai, 2011). This vaccine boycott dealt a severe blow to global eradication efforts. It accounted for 80% of the world's paralytic cases and the financial burden on the international community amounted to more than \$500 million (WHO, *Global alert and response*, 2009).

Resistance to polio vaccination is not restricted to Nigeria. There has been intense resistance to polio

campaigns in India and Pakistan for similar reasons. For instance, misconceptions about oral polio vaccine (OPV) and suspicions about motivations behind the campaign emerged, especially in the light of other visible problems (i.e. understaffed clinics, poor roads, other diseases). Misconceptions included: OPV caused illness in children, was ineffective, caused infertility and was part of a plan to curb growth of Muslims and scheduled Hindu castes (UNICEF, 2004; WHO/UNICEF, 2002.). In Pakistan, limited reach to children in underserved areas led to resistance towards vaccinators who were not members of some communities, especially all-male vaccinator teams, as well as barriers towards women's involvement in the polio eradication initiative. Caregivers reported being tired of repeated rounds and questioned the OPV's efficacy, a situation exacerbated by news coverage accusing the initiative of using a substandard vaccine (Cheng, 2004).

The violent activities of the radical Islamic sect, *Boko Haram* have compounded an already complex situation in Nigeria. They have created a climate of fear and insecurity in some parts of northern Nigeria. The group has been carrying out attacks on government offices, churches, schools and civilians in parts of the northeast, significantly

affecting regional security and creating potential accessibility challenges for health workers attempting to vaccinate.

It is clear that resistance to polio eradication in Nigeria stems principally from misinformation fuelled by local political community and religious leaders who felt alienated due to power shift to the south; this must be addressed squarely for us to gain momentum and get Nigeria rid of polio. The federal, state governments and other stake holders must see the eradication of polio as a public health emergency. Robust public health enlightenment campaign aimed at confronting misconceptions should be mounted. Strategic and synergistic communication efforts that integrate social mobilization, interpersonal communication, gender-and-culturally-sensitive interventions, mass/folk media and political advocacy are essential.

According to Obregon *et al.*, (2009) there are lessons to be learned from countries that have successfully eradicated polio. These include:

1. Implementation of communication intervention based on routine monitoring of epidemiological, social, and behavioral data on affected populations.
2. Intensive use of interpersonal communication and social mobilization at different levels to maximize reach, effectiveness and efficiency.
3. Mobilization of community leaders, communication and leadership building, engaging families and caregivers who question repeated polio vaccination.
4. Involving religious leaders as spokespersons and using faith based folk media (i.e. mosque announcements) to reach community members.
5. Working with trained communication outreach workers as part of a house-to-house strategy to reach children missed during national immunization days.
6. Advocacy with intensive grassroots mobilization to reach and communicate with marginalized communities.
7. Addressing social/gender norms to improve interpersonal communication and increasing access to hard-to-reach groups.

CONCLUSION

Nigeria's polio eradication programme is at a cross-road. The last critical push is of utmost importance for overall success. Despite setbacks, it must be acknowledged that Nigeria has made

remarkable achievements and progress in lowering the burden of polio. The challenge of polio however is that unless transmission is interrupted entirely, dramatic flare-ups and reversals remain a strong possibility.

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