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World Health Organization in the African Region: Picking the Gauntlet in the Fight against Poliomyelitis in the African Region

Joseph Chukwudi Okeibunor*

WHO Regional Office for Africa, Polio Eradication Programme, Cite Du Djoue, Brazzaville, Congo

***Corresponding author:** Joseph Chukwudi Okeibunor, Regional Social Scientist, WHO Regional Office for Africa, Polio Eradication Programme, Cite Du Djoue, Brazzaville, Congo, Tel: 242068819165; E-mail: okeibunorj@who.int

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Abstract

This paper reviews the status of polio eradication in the African Region. The fight against the scourge of poliomyelitis in the African Region continues with greater focus and determination on the part of the WHO African Region, its partners and governments despite the report of new cases at the point the Region was set to celebrate victory. The discovery of four new cases in July 2016 in previously insecure areas of Borno State, Nigeria, 24 months after the last case, increased the zeal to press on. By June 2017, almost 10 months passed since the latest case of wild polio virus reported in Nigeria on 21 August 2016; and 8 months since the latest circulating vaccine derived poliovirus type 2 (cVDPV2) in Nigeria. The search for polioviruses in humans (acute flaccid paralysis surveillance) and in environmental samples is being intensified. The Region has also remained on track with the different objectives of the global Polio Eradication and Endgame Strategic Plan 2013-2018. All 47 countries switched from trivalent Oral Polio Vaccine (tOPV) to bivalent Oral Polio Vaccine (bOPV) between April 17 and May 01, 2016. Thirty-four countries introduced inactivated polio vaccine (IPV) in their routine immunization programmes. In 2016, all countries in the Region conducted phase 1 containment and documentation of polioviruses destruction in their laboratories and the African Region Commission for Certification (ARCC) of Poliovirus Eradication had accepted documentation of polio-free status from 38 out of 47 countries. The African region also documented and published best practices of polio eradication in peer-reviewed journals, so that the lessons learnt from polio could benefit other public health interventions in the Region. However, governments and partners should remain committed and deploy critical resources for intensifying surveillance, prompt response to detected viruses and strengthening of immunization systems to finish the fight.

Keywords: WHO/AFRO; Polio; Virus; Outbreak response; Immunization

Introduction

The detection of new cases of wild polio virus (WPV) in the second half of 2016 was not only a setback but devastating for a region that was close to being certified polio free [1,2]. Following the World Health Assembly declaration of polio eradication as a public health emergency in 2012, WHO with its partners, as well as other stakeholders and national governments in the African Region made good efforts to reach the goal as quickly as possible [3-6]. The Global Polio Eradication Initiative (GPEI) strategy, hinged on four pillars of strengthening routine immunization systems to ensure high coverage with polio vaccines, vigorous surveillance for acute flaccid paralysis (AFP), supplementary immunization and "mop up" immunizations, was adopted [3]. This four pillar strategy was faithfully implemented in the African Region which was home to more than half the global polio cases as late as 2012 [7]. Approximately 12,000 polio cases were reported in the Region before 2008 when the Region embarked on better implementation of the core strategies, increased accountability, and implementation of innovative strategies [3,8-11]. Between 2008 and 2012, cases of WPV dropped from 912 reported in 2008 from 12 countries to 128 cases from 3 countries in 2012 [3]. In 2014, only 6 cases were reported in Nigeria and no confirmed case in 2015.

The fortunes of the hitherto resilient polio virus began to plummet, as a new global and local push to eradicate the disease was launched. A global partnership comprising of WHO and its key partners such as the United Nations Children's Fund, the United States Center for Disease Control and Prevention, Rotary International, and Bill and Melinda Gates Foundation, among others, as well as other stakeholders and national governments in the African Region generated enormous human, financial and material resources committed to polio eradication [2]. The four pillar strategy of the GPEI was intensified to make progress. There were strong leadership and unwavering commitment of national governments, traditional and community leaders, dedicated partners, who never gave up even when the disease was unrelenting and polio eradication targets shifted. The field staff also demonstrated unprecedented courage, zeal and determination, often devising innovative ways

to deliver polio vaccines to infants and children in insecure areas [1].

Progress and new challenges in the fight against polio in the African Region

By 2016, the battle seemed won and victory waiting to be declared. For over two years, between 2014 and 2016, there was no report of WPV in the Region. The last case of WPV1 was in Nigeria with onset on 24 July 2014. WPV2 was globally eradicated in September 2015 while WPV3 was last reported in Nigeria with onset on 10 November 2012. However, the preparation to blow the trumpet for celebration was cut short with the revelation of four new cases in children, who were never vaccinated, from previously insecure areas in Borno State, Nigeria.

The undetected WPV1 transmission in Nigeria for almost two years constituted a great concern in the Lake Chad region. The last cVDPV2 case in Guinea in December 2015 posed risk of cVDPV2 continuation beyond the switch from the trivalent oral polio vaccine (tOPV) to bivalent oral polio vaccine (bOPV) with risk of spread to neighbouring areas. One of the global criteria to be met before conducting the switch was to ensure that IPV was introduced in the national routine vaccination programmes to boost population immunity against type 2 viruses. All the 47 Member States effectively switched from tOPV to bOPV but there was global shortage of IPV and some countries did not introduce the vaccine in the Region.

Environmental surveillance revealed cVDPV2 circulation in Borno State, Nigeria, on 23 March 2016 and in Sokoto State in Nigeria on 28 October 2016. Four cases of cVDPV2 were reported between February-April 2017, genetically unlinked to the Nigeria virus were confirmed in two provinces in the Democratic Republic of Congo.

With the new WPV1 and cVDPV2 cases in Nigeria and other countries, the challenges seemed insurmountable. However, contrary to expectations of submitting to defeat, the WHO in the African Region, national governments, and partners quickly decided to pick the gauntlet and persisted in the fight against poliomyelitis until victory is assured. This paper documents some of the steps taken in this new fight against the new challenges of poliomyelitis in the African Region.

Picking up the gauntlets

Following the detection of four new poliovirus type 1 (WPV1) cases in Nigeria in the second half of 2016, after two years of polio free status, and laboratory confirmation by July 2016, the WHO Regional Office for Africa rapidly convened a meeting of Ministers of Health from Nigeria and neighbouring countries around the Lake Chad Basin (Cameroun, Central African Republic, Chad and Niger) to declare the new polio outbreak in Nigeria, a sub-regional public health emergency. The declaration was made in Addis Ababa, Ethiopia, in August 2016 during the Regional Committee session of Ministers of Health of the African Region. A Lake Chad Basin Polio Coordination Task Team was established in N'Djamena, Chad, in August 2016 to oversee the coordination of the polio outbreak response activities. Human, financial and material resources were rapidly mobilized to confront the sub-regional challenge. Five synchronized bOPV outbreak response rounds were successfully conducted between September and December 2016 to tackle the WPV1 outbreak, and two rounds of monovalent OPV type 2 (mOPV2) were conducted between December 2016 and January 2017 in response to the cVDPV2 outbreak. The African Region was the first WHO Region, globally, to use mOPV2 to respond to cVDPV2 after the switch from tOPV to bOPV. By June 2017, ten months had passed since the last WPV1 case with onset on 21 August 2016, in Borno State, Nigeria. Also, eight months had passed since the latest cVDPV2 case in Sokoto State in Nigeria indicating that the implemented vaccination rounds in response to the outbreaks have been effective.

Speed and adequate geographical scope of the outbreak responses have been of essence in the Region to ensure that the outbreaks are stopped at source and also to mitigate further spread to other countries. For instance, the first response to the cVPDV2 outbreak in Nigeria in 2016 was conducted using mOPV2 within a record 14 days of confirmation of the outbreak. Beyond that, the responses were geographically extended and synchronized to cover four other countries in the Lake Chad Basin region. In effort to ensure that even the insecure areas in the Lake Chad Basin countries are reached, the vaccination responses were conducted with the support of the military. The cases of cVDPV2 in DRC have been investigated with the first of the planned two mOPV2 outbreak responses rounds conducted.

The African Region has prioritized intensification of surveillance to avoid missing any polioviruses circulation and to fulfil the requirements for certification of polio eradication. Steps are taken to strengthen surveillance in areas where gaps have been noticed, both in accessible and inaccessible areas. Furthermore, there has been progressive expansion of environmental surveillance to complement surveillance of acute flaccid paralysis (AFP) and increase sensitivity of detecting polioviruses (**Figure 1**). Some of the steps include increasing the number of local surveillance informants for community based surveillance and expansion in the use of geographical information system (GIS) technologies for tracking and providing "real-time" evidence of conducted passive and active surveillance activities. Other steps include use of other innovations and technologies such as the Auto-Visual AFP Detection and Reporting (AVADAR) by community informants through use of smartphones, focusing on high risk areas; electronic surveillance (eSurv) for real time information of conducted field activities; and using electronic open data kit (ODK) source technology to monitor surveillance activities. The Brazzaville initiative is another initiative put in place to strengthen surveillance in selected high risk areas within countries where additional human, material and financial resources are deployed to weak performing areas. The Region has also established an Accountability Framework for polio-funded personnel in the Region to ensure that surveillance and vaccination activities are objectively monitored and evaluated, with implementation of management action, based on staff performance.

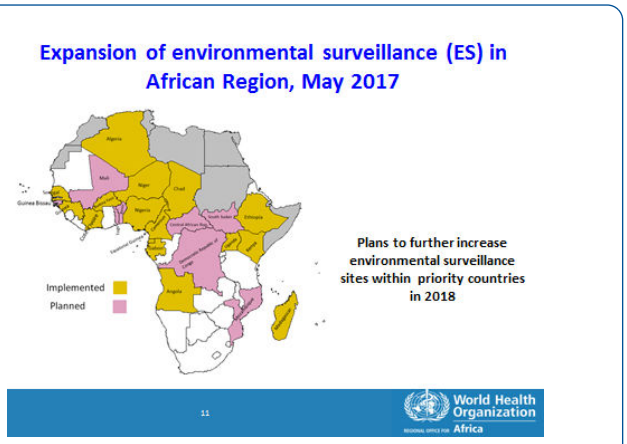

Figure 1: Expansion of environmental surveillance in African Region, May 2017.

On the other objectives of the polio eradication and end-game strategy, 2013-2018, such as the introduction of inactivated polio vaccine (IPV) has been successfully implemented in 34 of the 47 countries of the African Region (**Figure 2**). Additional three countries will introduce the IPV in later part of 2017. The remaining ten countries have delayed introduction due to global shortage of the vaccine. In 2016, all the 47 countries in the Region successfully conducted and documented laboratory containment of polioviruses and potential polioviruses infected materials, as the first phase of laboratory containment according to the global action plan (GAPIII). The second phase (1b) has commenced with 41 reports already received in 2017 (21 fully accepted and 14 provisionally). Overall, 38 countries in the Region have their polio free status documentation accepted by the African Regional Certification Commission (ARCC) as at May 2016 (**Figure 3**).

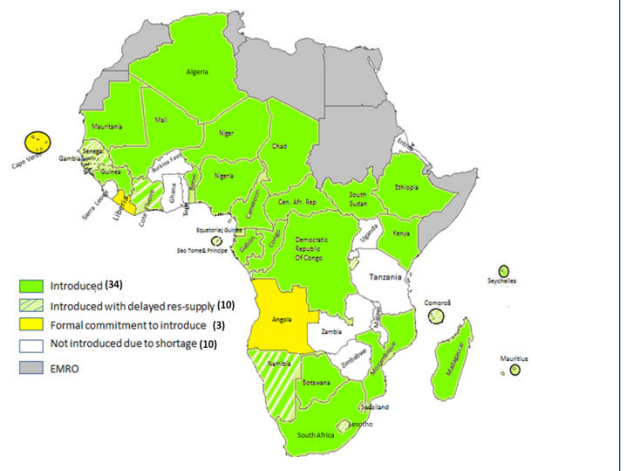

Figure 2: Status of introduction of IPV in the African Region.

The remaining nine countries have not submitted their polio-free status documentation because they had importation of wild polioviruses in 2013-2014, and 3 years of no confirmed wild polioviruses with certification level surveillance are required before the documentation can be considered by the ARCC. The imported polio outbreaks have been declared stopped by international experts' evaluation teams in 2014-2015 and the processes for preparing documentation have commenced with technical support by the WHO African Region.

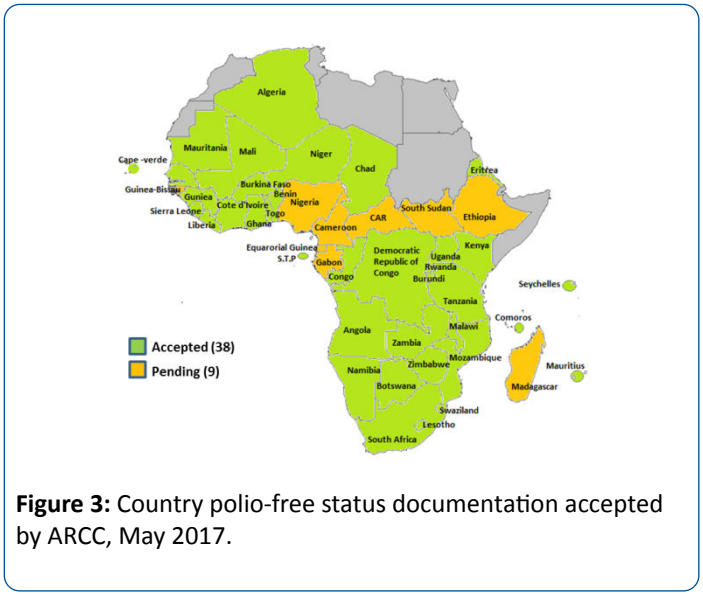

Figure 3: Country polio-free status documentation accepted by ARCC, May 2017.

Conclusion

The Region has remained on top of the fight against polio despite the seeming set back orchestrated by the report of four new cases which were hitherto unvaccinated due to their security isolation. Rather than dampening the spirit of the WHO in the African Region with its long committed partners, country governments and field staff, the new challenges galvanized and strengthened the resolve to rid the Region of the devastating polioviruses. The dangers posed by any gaps in surveillance as well as coverage with polio vaccines have stimulated stakeholders into thinking of more creative ways of circumventing obstacles and challenges and to reach every child with the vaccines, promptly detect polio cases and respond adequately. Governments supported by WHO and partners continue to come up with local strategies and innovations which are progressive gaining ground into the insecure areas, vaccinating children and conducting surveillance. Countries should continue to come up with local innovations to reach children in hard to reach and insecure areas. A right mix of polio vaccines should be available to protect and boost population immunity against polio [1,12-13].

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