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Towards a polio free world – the End Game plan

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Introduction:

Poliomyelitis, the dreaded cause of lameness, was ravaging the world in 1988; when more than 125 countries were endemic with the disease and about 350,000 new cases were reported every year. It could have been fanciful to consider eradicating the disease in any future. It was a resolve bold enough at the 41st World Health Assembly then to do it. The disease did provide epidemiological opportunities to make it a possible candidate for eradication and the idea was first realized soon in 1997; when the American region was certified as polio free; the last case being reported from Peru in 1994 (Louis Fermin Tenorio). Other regions did not fall short much; Mum Chanty of Cambodia was the last case from Western Pacific region in 1997 and the region was certified as polio free subsequently in the year 2000. Europe was the third region in the list; Melik Minas from Turkey had the disease in 1999; and the region got the same certificate in 2002.

Meanwhile the story in India and South East Asian region was more protracted. Of the three types of polio viruses, the weakest one, wild type 2 was reported last from Aligarh in India in 1999. But it took another thirteen years to put a stop to the next type, wild type 3 (Pakistan in 2012). The last wild polio virus case of India and South East Asia region (onset on January 13) was found at Howrah in 2011 when poor Ruksar Khatun had contacted the disease. In 2012 India was declared no longer a polio endemic country. Later on the

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South East Asian region was certified as polio free on March 27, 2014. But in Africa and two countries of Eastern Mediterranean region (Pakistan and Afghanistan) transmission of wild polio virus continued. On July 24, 2014 last wild polio virus of Africa was detected in Nigeria. Subsequently the country interrupted wild polio virus transmission and was declared non endemic in 2015 leaving only two countries from the 125 when the journey had started. The latest of such glorious milestones was achieved when WHO certified that type 2 wild polio virus has been eradicated on September 20, 2015. The success story in India has been lauded greatly by the international community as technically speaking; the scenario had been most challenging in this country. But elsewhere, like in Afghanistan and Nigeria, things still pose problem – a huge number of children are still unreachable and the health workers being targeted with physical assaults even in 2012 and 2013.

This achievement and absence of type 2 wild polio virus since after 1999 October, confirmed the strategic feasibility of global interruption of polio virus transmission. At the same time, concern has also been raised on continuing use of type 2 OPV, even after more than a decade of last type 2 wild polio virus detection.

Keeping the above two issues in the background and targeting global interruption of polio transmission by 2018, " Polio end game plan 2013 – 2018" has been formulated for global implementation. The plan was prepared by the GPEI (Global polio eradication initiative), in extensive consultation with national authorities, global health initiatives, scientific experts, donors and other stake holders. Its goal is the complete elimination and containment of all wild, vaccine related and Sabin polio virus, so no child ever again suffers paralytic poliomyelitis.

The four main objectives of the plan are :

- Polio virus detection and interruption
- Immunization systems strengthening and OPV withdrawal
- Containment and certification
- Legacy planning

Polio virus detection and interruption:

The first objective is to stop all Wild Polio Virus (WPV) transmission by the end of 2014 and any new outbreaks due to a circulating vaccine derived polio virus (cVDPV) within 120

days of confirmation of the index case. A sensitive surveillance mechanism must be in place to identify not only wild polio virus but also any vaccine derived polio virus and Sabin virus. Institution / facility based AFP surveillance is to be aptly supplemented with a network of environmental surveillance (sewage sampling), with a special focus on those geographical areas where such threats are at their worst.

Planned OPV campaigns should focus on complete coverage of all target children with special focus on areas repeatedly missed due to difficult location or conflict affliction. Rapid outbreak response needs to be mounted on detection of any wild polio virus or VDPV. Each country must be ready with an emergency response plan that suites best to its own situation.

Immunization systems strengthening and OPV withdrawal:

This objective not only seeks to hasten interruption of all polio virus transmission, but also helps build a stronger system for delivery of other lifesaving vaccines. Countries are to use their infrastructure to more effectively strengthen immunization systems. Success in elimination cVDPVs depend on eventual withdrawal of all OPVs beginning with the type 2 component of tOPV. It is the withdrawal of type 2 first because 97% of cVDPVs across the globe are due to type 2. Operationally, type 2 OPV withdrawal has been implemented by replacing tOPV (trivalent oral polio vaccine) with bOPV1,3 (bivalent oral polio vaccine 1,3) or, "switch" from tOPV to bOPV. Following the tOPV-bOPV switch, bOPV will be the vaccine of choice for responding to all WPV1 or WPV3 outbreaks and mOPV type 2 will be the vaccine of choice for responding to any cVDPV type 2 outbreak. It was decided globally that each country would select one specific date during two weeks of April 2016 as its "National Switch day". On this day countries would recall all tOPV from all cold chain points extending up to Sub centre / clinic level and start administration of bOPV for all activities / program. Recalled tOPVvials would be disposed off at district level maintaining the BMW disposal norms. After the switch date, no tOPV(including old and date expired vials) would be available anywhere in the country. This would be validated by independent "Switch monitors" across the nation. 25 April was the "National Switch day" in India.

Withdrawal of type 2 OPV from the program may lead to decline in population immunity against type 2 polio virus. To address this issue, "Switch" was timed with two prior activities. Firstly, two high quality NID rounds

with tOPV and secondly to introduce at least one dose of IPV (Inactivated polio virus vaccine, which is trivalent) before the switch. The overall goal is the introduction of at least one dose of IPV in all OPV-using countries in 2015 and the withdrawal of OPV2 globally in 2016.

All countries should introduce at least one dose of IPV into their routine immunization schedules. IPV has been introduced in National Immunization Schedule of India as a single dose (0.5 ml IM) at 14 week along with the 3rd dose of OPV. In a few states, fractional dose IPV is being administered (0.1 ml intradermal) on 6 & 14 week contacts.

Whatever be the vaccine (bOPV or IPV), to achieve the goal of interruption of transmission, effective coverage in routine immunization must be around 95%. Special target should be on the poor performing districts, where at least 10% improvement is to be ensured every year. Following the global certification of polio eradication, bOPV will be withdrawn from routine use worldwide.

Containment and certification :

All Institutions, laboratories and production units dealing with polio virus or biological substances potential to contain polio virus must implement and ensure proper bio safety (containment) measure to prevent any accidental leakage of virus in the environment.

Before regional certification, the RCCPE (Regional certification commission for polio eradication) ensured completion of phase 1 of laboratory containment in all member countries. In India > 40,000 laboratories were reviewed in person to verify the existing containment mechanism. Before global certification, phase 2 of laboratory containment must be completed. (Each phase has sets of specific criteria). Experts are finalizing international consensus on long term bio containment requirements for polio viruses.

For global certification of polio eradication, all RCCPEs are to review the documents from all their member countries and verify the absence of wild polio virus in presence of a certification standard surveillance , completion of phase 2 of laboratory containment for polio virus and presence of a robust Emergency preparedness and response plan.

Legacy planning :

This objective aims to ensure that the world remains permanently polio free and that the investments in polio eradication provide public health dividend in the years to come. Careful planning is required to ensure that lessons learnt during polio eradication, as well as assets and infrastructure built in support of the effort, are transitioned appropriately to benefit other development goals and global health priorities.

To conclude it must be emphasized that the last hurdle in a long distance race is often the most difficult one. True, that since 2012 things has changed more favourably for polio eradication than ever. The decline in number of cases in the still endemic countries, the revamped commitment from all sectors of those countries an overall monitoring from the other countries have all improved. But in some contexts, it is necessary to tackle issues and focus interventions at a micro level to achieve coverage levels and a combination of innovations tailored to the country context can deliver success in even the most challenging conditions. We must not forget the projection that that failure to complete eradication would result in at least 200,000 cases annually in low-income countries, with consequent strain on health systems. Completing eradication will generate net benefits of at least US$ 40-50 billion, mostly in low and low-middle-income countries.

*Data as on 15 June 2016. Source – www.polioeraducation.org

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