President's Page

Polio Eradication: Window of Opportunity!

India came very close to eradicating polio in 2005 when only 66 cases were confirmed in the country. While the polio outbreak in 2006 was a setback to the programme, this outbreak was smaller than the 2002 outbreak. As of 19th January 2007, 655 cases of virologically confirmed polio were reported from the country with onset of paralysis in 2006. Of these, 634 are of polio type 1 and 21 due to polio type 3. A large number of polio type 1 cases (76% of the 437 type 1 viruses sequenced to date) in West U.P. are of a single genetic group which spread from Moradabad and surrounding districts and infected much of West U.P., parts of Central Eastern U.P. and some districts in neighboring states. Seventeen per cent cases are from a second genetic group that originated in endemic districts of north central Bihar and spread to several other districts of Bihar and Eastern U.P. Type 3 WPV though continued to circulate in 2006, but remained localized to only five districts in and around Moradabad.

The unexpected turn of events during 2006, which saw resurgence of wild polio cases in traditional endemic regions of western Uttar Pradesh and Bihar, has shaken confidence of many partners engaged in polio eradication initiative in the country. Doubts are raised by different quarters on the effectiveness of the strategy and efficacy of the vaccine. A thorough dispassionate analysis of the reasons would reveal that the real reasons for having yet another outbreak despite using a more potent vaccine (monovalent-OPV) were not related to poor strategy but lack of proper implementation of it at the grass root level. Broadly, they can be clubbed in to two sub-heads:

1. Poor performance of SIAs in highly endemic districts (especially in Moradabad division) during later half of 2005 and early part of 2006.
2. Sub-optimal efficacy of tOPV in western U.P.

The former was the main factor that allowed formation of reasonably significant pool of poorly immunized children that not only facilitated smooth viral transmission from Moradabad division to rest of other districts of western U.P. but also to the central and eastern U.P. The genetic analysis also confirms rapid spread of a single P1 cluster to cause widespread paralysis within a short span of few months. This gap in vaccination coverage also indirectly undermined the efficacy of OPV. Peculiar environmental and socio-demographic milieu of western U.P. (high population density, high birth rate, poor sanitation, *etc*.) coupled with poor SIAs performance with consequent low coverage made the task of OPV even more daunting in these areas. Falsification of data and fierce resistance by the minority community in western U.P. further contributed to poor coverage in key districts having a very high force of type-1 polio virus.

Data clearly shows that while the overall immunization status of children under the age of 5 years is improving and is very high in West U.P. and Bihar, younger children in these areas are less vaccinated than the older children. This is primarily because of the lesser opportunities that the younger children get for vaccination. As a result, younger children are more susceptible to the polio virus and are getting infected with it before they have received sufficient doses to protect them. This explains the fact that nearly 80% of the polio cases in the endemic areas of the country during 2006 are under the age of 3 years.

Another 'weakling' of the program is dismally poor status of routine immunization (RI) in U.P. and Bihar. The 'full immunization percentage' (FI %) was only 43.9% for U.P. (2005-06, coverage evaluation survey by UNICEF) and only 30% for Bihar.

There is strong scientific evidence that the efficacy of mOPV1 is much greater than tOPV in inducing immunity against WPV1 (as much as 3

times higher per dose). This finding has been corroborated by a recent analysis of data on doses received by polio and non-polio AFP cases.

The biggest challenge

Eighty per cent of wild polio cases in 2006 were less than 3 years of age. The biggest challenge is how to rapidly and efficiency close this 'immunity gap' in young children with enough doses of m-OPV before wild virus gets a chance to reach them. It is this susceptible cohort of young children which is sustaining polio in India. Three options to 'shut' this gap rapidly are:

1. Intensified: m-OPV rounds in endemic areas.
2. Extensive: use of birth dose of m-OPV.
3. Targeted: use of IPV in key districts.

Though a pilot project with 'birth dose of m-OPV' in Moradabad failed to show immediate impact to rapidly close immunity gaps in young children, its long term impact looks promising.

The second option of 'accelerated intensified SIA rounds' of shorter duration targeting younger children (<3 years old) will have maximum impact on closing this gaps. IEAG has recommended two NIDs, and two large scale SNIDs in first half of 2007, along with supplementary SIA rounds in reservoir areas of western U.P. (20 districts) and Bihar (10 districts) every 3-4 weeks in early 2007 to have a total of 6-7 m-OPV rounds during first half of 2007.

Considering the lower efficacy of OPV in highly endemic districts of U.P. and Bihar, IPV is another tool that is likely to be tested in two areas of the country during the next few months to assess the operational feasibility of its use as and when required. Though IPV alone will not be able to stop wild virus transmission, if used intelligently in key areas, it can help mOPV to rapidly improve immune status of young children. Already, IEAG has agreed to under-take a pilot study on adding IPV rounds in two blocks of western U.P. in second quarter of 2007 to evaluate not only operational and communications issues, but to assess its overall impact on wild virus transmission also. In this regards, a high level meeting of 'Working Group on IPV pilot use in endemic districts' was organized on 6th February 2007 in New Delhi.

Conclusion

The next few months of 2007 would be the country's best chance to stop polio virus circulation in the high risk endemic areas of the country. The improvements in SIA quality during the past few rounds, the low season that is ahead of us and the high overall immunity status of children, all together provide this opportunity. It is this window of opportunity *i.e.*, first 6 months of 2007 that are extremely critical to the success of whole polio eradication efforts in India.

The need of the hour is to adopt a 'multi-pronged approach'. OPV has worked wonderfully not only all over the world but in rest of India also barring the two 'hotspots'. Even in western U.P., every district has some point of time been polio free with this tool. There are not many reasons to believe that the similar efforts can not be duplicated once again and success can not be achieved. What is lacking is a concerted, consistent effort over a period of time. Monovalent OPV is the tool of choice to be employed intensively in endemic region. Let us all join hands together to make the best use of the opportunity by boosting the immunity in the youngest children of our country. Let us participate in the polio immuni-zation campaigns and ensure that every child is reached every time with yet another dose of OPV.

It is not only the question of polio eradication, what lies at stake is our credibility, our commitment to millions of children of this vast nation to offer them a new dawn free of the curse called polio. Also lie at stake are our future endeavors to overpower many other such 'curses' to mankind. If we fail here, no future global attempt to overpower any other disease will ever be made.

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