Recommendations of National Consultative Meeting on Polio Eradication, 2010; Polio Eradication Committee, Indian Academy of Pediatrics (IAP)

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The Polio Eradication Committee (PEC) of Indian Academy of Pediatrics Committee has periodically conducted National Consultative Meetings on Polio Eradication (NCMPE). The third NCMPE was held on 19 March 2010 at New Delhi. The names of participant experts are given in *Annexure 1*. The recommendations of the first NCMPE and the 'IAP Position' on polio eradication as enunciated in the second NCMPE have been published(1,2). The recommendations of the third NCMPE and an update on previously stated 'IAP Position' are presented here.

CURRENT STATUS OF POLIO ERADICATION IN INDIA

The PEC expressed satisfaction on the progress made by Global Polio Eradication Initiative (GPEI) in India in the last one year, especially on the epidemiology of type 1 wild poliovirus (WPV), by the intensive use of monovalent OPV type 1 (mOPV1). However, failure to completely interrupt its transmission and persistence of intense transmission of type 3 WPV in western UP and Bihar are still causes for concern. PEC believes that 2010 is a crucial year for polio eradication in India - by achieving good control over transmission of type 1, GPEI is within striking distance of interrupting its transmission. According to the 'four-year' cycle, a type 1 polio outbreak is due in 2010, but it should not be allowed to happen. With the availability of bivalent OPV (bOPV) against types 1 and 3, type 3 WPV can also be drastically controlled, simultaneously. While mOPV1 is a sharper tool against WPV 1, bOPV seems to be adequate against WPV 3; hence there may not be any more need for mOPV3. Thus, the key to success lies in intelligent and imaginative use of the three OPVs, i.e. mOPV1, bOPV and tOPV, against WPV types 1 and 3, and circulating Vaccine Derived Polio Virus (cVDPV) types 1, 2 and 3. At the same time, PEC advocates the need of having a "plan B" ready in case the current strategy fails to achieve elimination of WPV type 1 by the end of this year. Serious consideration should be given to a contingency plan to use IPV in endemic areas, as recommended earlier by PEC(1) if all other efforts fail to achieve target. PEC also recommends a special drive for environmental sanitation and for high routine immunization coverage for the targeted 107 blocks of Uttar Pradesh (UP) and Bihar marked as 'high-risk' by the National Polio Surveillance Project (NPSP).

OPV-INDUCED GUT IMMUNITY AND ROLE OF FULLY IMMUNIZED OLDER CHILDREN IN SUSTAINING WPV TRANSMISSION

Recently, NPSP has documented WPV 1 infection and fecal shedding of virus among a small proportion of older children who are close contacts of under-5 children with polio. PEC believes that OPV had failed to provide adequate herd effect; 'contact immunization' due to widespread transmission of vaccine viruses of OPV had proved to be a myth, especially in endemic regions. The phenomenon that vaccinated and (themselves) protected children may play a role in spreading

WPVs is known for many decades and is widely accepted in India, but not by the international experts. Mucosal immunity induced by OPV is not only ineffective against WPV infection, but it also wanes over time. Furthermore, mucosal immunity is better when vaccine efficacy is high, and ultimately it more closely correlates with the titer of homologous humoral antibody than its mere presence. Protection from disease and mucosal immunity do not necessarily parallel each other. OPV's efficacy is low and the force of transmission of WPV is very high in Northern India, resulting in imbalance between humoral and mucosal immunity on the one hand and with the force of WPV transmission on the other.

However, the issue related to immunized older children facilitating wild virus transmission needs to be studied further before taking any remedial measures to address that. PEC believes that the question, "how significant is the contribution of imperfect gut mucosal immunity to the persistence of transmission in these areas?" needs further evaluation. If studies confirm significant contribution of both the waning mucosal immunity and OPV-vaccinated children responsible for sustaining circulation of WPVs, strategies to boost mucosal immunity may be urgently required. The role of IPV (one or preferably two doses) in rapidly boosting mucosal immunity can be worth considering here instead of broadening the age of OPV administration, as has been proposed.

ISSUES RELATED TO POLIO VACCINES

Success of the GPEI in India depends on how efficiently and intelligently all the available vaccines against polio are utilized. The current research by ICMR/GPEI has failed to show an adequate seroconversion with birth dose of mOPV1 given on the day of birth (0 day). Based on the evaluation of all the study findings, it suggests an alternate approach: achieve high coverage with tOPV at birth (avoiding days 0-2), 6 weeks, 10 weeks, 14 weeks, and 15 to 18 months. PEC advocates bOPV for all Supplementary Immunization Activity (SIAs) with the number of National Immunization Days (NIDs) fixed as 3 in the lowest season; strategic use of IPV to improve gut immunity in highly endemic regions; and, introduction of IPV in routine immunization in southern states free of wild polio, to facilitates OPV cessation.

VAPP AND CIRCULATING VDPV

PEC expressed surprise on continuous neglect and disregard shown to Vaccine Associated Polio Paralysis (VAPP) while cVDPV (essentially a form of the former) cases were acknowledged. PEC reiterates its demand of having more transparency on the issue of VAPP. It urges the NPSP to list VAPP cases along with the wild poliovirus and cVDPV cases in the final tally.

Though cVDPV may not be a problem as of now, PEC recommends to the Ministry of Health (MoH)/Government of India (GOI) to start discussions to plan appropriate strategies and measures to prevent and pre-empt the outbreaks of cVDPV, especially during post-eradication era.

RI AND UIP REINFORCEMENT

PEC believes that re-building universal immunization program (UIP) in several states has to be undertaken as an immediate priority, irrespective of the turns of events pertaining to polio eradication. It urges the MoH/GOI to urgently identify reasons why coverage is still low in key districts of UP. If reasons like staff shortages, vaccine shortages, and incon-venient sessions for families, are found, they should be remedied at the earliest. There is an urgent need to establish a disease surveillance system within UIP. PEC requests MoH to go through its position paper published earlier on how to reform and rebuild UIP in India(2).

CONTINUED RESEARCH AND FUTURE STRATEGIES

PEC welcomes the current initiatives of GOI (ICMR)/GPEI (NPSP) in carrying out many research projects to determine current and future needs. However, it underlines the need to perform certain studies especially on mOPV/bOPV in the settings of high WPV endemicity, especially in western UP and central Bihar to reconfirm the findings of these studies conducted in polio-free cities. There is a need to study impact of one or two doses of IPV on mucosal gut immunity in OPV-primed children to rapidly close waning gut immunity in endemic regions.

POST-ERADICATION ISSUES

PEC reiterates many of its earlier recommendations on post-eradication strategies(1). It believes that the time is ripe now to discuss and plan for the future vaccination strategy rather than waiting till WPV elimination is achieved. PEC favors the phased introduction of IPV in the RI programs of southern states where WPV transmission has already halted years ago, followed gradually by universal use in RI all over the country (when UP and Bihar are also polio-free). OPV used thereafter should be confined to three-annual pulses through NIDs, until we are certain that WPV transmission has truly stopped. PEC believes there is a need to chalk out a clear strategy on how to deal with the issues like OPV cessation plans, global synchronization versus regional/national synchronization, duration of AFP surveillance, tackling of future outbreaks of both wild and vaccine viruses, role of IPV in controlling future outbreaks of cVDPVs, development of safe and affordable IPV etc. PEC thinks that there is a need to develop country-specific economic models for employing universal IPV during post-eradication era.

REFERENCES

1. Vashishtha VM, Kalra A, John TJ, Thacker N, Agarwal RK, for the Polio Eradication Committee; Indian Academy of Pediatrics, Recommendations of 2nd National Consultative Meeting of Indian Academy of Pediatrics (IAP) on Polio Eradication and Improvement of Routine Immunization. Indian Pediatr 2008; 45: 367-378.
2. Polio Eradication Committee, Indian Academy of Pediatrics. Universal immunization program and polio eradication in India. Indian Pediatr 2008; 45: 807-813.

ANNEXURE 1

Participating Members: *Deepak Ugra, (Chairman); T Jacob John, (Advisor); Naveen Thacker, (Advisor); Panna Choudhary; Vipin M. Vashishtha, (Convener); Ajay Kalra, (Co-Convener); Utpal Kant Singh, (Co-Convener); Ajay Gambhir; Anju Agarwal; Piyush Gupta; Rajinder Gulati; Shyam Kukreja and Yash Paul.*

Special invitees: *Walter Orenstein, Gates Foundations; Jagdish Deshpande, Enterovirus Research Laboratory, Pune; Devendra Khandait, NPSP.*