VACCINOLOGY I

POLIO VACCINES

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Abstract: *Global Polio Eradication and Endgame Strategic Plan 2013-18 has emphasized complete and ultimate withdrawal of oral polio vaccines from all immunization programs across the globe. The term 'eradication' addresses wild polio virus and 'endgame' addresses vaccine associated paralytic polio and Vaccine Derived Polio Virus. The most crucial step in this direction was global implementation of synchronized withdrawal of type 2 Oral Polio Vaccine in 2016 through a switch from trivalent Oral Polio Vaccine to bivalent Oral Polio Vaccine. Still this can be associated with small but real risk of Vaccine Derived Polio Virus outbreaks. To address this vital issue, all Oral Polio Vaccine doses should ideally be replaced by inactivated poliovirus vaccine. Inactivated poliovirus vaccine introduction (in previously Oral Polio Vaccine only using countries) has increased global inactivated poliovirus vaccine demand, resulting in demand greater than supply. Such shortage has resulted in giving fractional doses of inactivated poliovirus vaccine intradermally as a risk mitigation in our national immunization program. Currently, Advisory Committee on Vaccines and Immunization Practice recommends bivalent oral polio vaccine at birth followed by inactivated poliovirus vaccine at 6 - 10 - 14 weeks stand alone or as part of Diphtheria Tetanus and whole cell pertussis vaccine / Diphtheria Tetanus and acellular pertussis vaccine combos and a booster of inactivated poliovirus vaccine / combo at 15-18 months and second booster at 4 to 6 years of age. An alternate schedule is two doses of intramuscular inactivated poliovirus vaccine instead of three for primary series if started at 8 weeks, with an interval of 8 weeks between two doses. All inactivated poliovirus vaccine immunized children should receive Oral Polio Vaccine on all supplementary immunisation activity days till 5 years of age. In case injectable inactivated poliovirus vaccine is not available or feasible child should be given 3 doses of bivalent oral polio vaccine with two fractional doses of Inactivated poliovirus vaccine (IPV) at a Government facility at 6 and 14 weeks or at least one dose of intramuscular inactivated poliovirus vaccine, either standalone or as a combination vaccine, at 14 weeks of age.*

Keywords: *Polio vaccines, VAPP, cVDPV, Polio eradication.*

Points to Remember

- ***Poliomyelitis, a serious crippling disease is now on the verge of eradication. Role of both inactivated polio vaccine (IPV) and oral polio vaccine (OPV) is indispensable. Among these, OPV is the major contributor to India's success story in polio elimination and eradication.***
- ***OPV is extremely safe and effective, cheap and easy to administer. It imparts excellent gut immunity. In some unforeseen situations it rarely causes Vaccine-associated paralytic polio (VAPP) and Vaccine-derived polioviruses (VDPVs).***
- ***Global Polio Eradication and Endgame Strategic Plan 2013-18 has emphasized complete and ultimate withdrawal of oral polio vaccines (OPV) from all immunization programs across the globe.***
- ***All OPV doses should ideally be replaced by IPV. If not feasible child should continue 3 doses of bOPV with 2 doses of fIPV at public sector.***
- ***An IPV-only schedule may be considered in countries with both sustained high immunization coverage and the lowest risk of both WPV importation and transmission. A primary series of 3 doses of IPV should be administered beginning at 2 months of age. If the primary series begins earlier (e.g. with a 6, 10 and 14-week schedule) then a booster dose should be given after an interval of ≥6 months (for a 4-dose schedule).***
- ***To mitigate the risk of undetected transmission, WHO recommends that endemic countries and countries with a high risk of WPV importation should not***

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switch to an IPV-only or a sequential or 2 doses of fIPV - bOPV schedule at this time. The 3 bOPV+ 1 IPV or two doses of fIPV schedule as currently recommended should be adopted and supplemental immunization activities should continue to support intensive efforts to eliminate poliovirus transmission.

- ***Combined IPV+OPV schedules appear to correct for the lower immunogenicity of OPV in developing countries. IPV induces pharyngeal immunity similar to that of OPV, but much less intestinal immunity.***
- ***Birth dose OPV and OPV in SIAs till 5 years of age are very important.***

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