International Journal of Medical and Health Research
ISSN: 2454-9142
www.medicalsjournals.com
Volume 1; Issue 4; November 2015; Page No. 149-150

Polio vaccine: Vaccination and status update

Nikhilesh Nain, YN parikh, Palak T Hapani

Resident Doctor, K.T Children Hospital Rajkot.

Abstract
Polio is an acute communicable disease caused by any 1 of three poliovirus serotypes (types 1, 2, 3). Route of spread for this virus is faecal- oral and oral to oral in places of poor oral hygiene.
In 1988 annual global burden of paralytic polio was > 350000 cases with wild type virus in more than 125 countries. WHA (world health assembly) resolved to eradicate polio by year 2000 and Global Polio Eradication Initiative (GPEI) was established. Worldwide sustained use of polio vaccine since 1988 has led to precipitous drop by >99% and no of endemic countries from 125 to 3.
Globally last case of polio caused by circulating WPV type 2 occurred in India in 1999. Nigeria, Pakistan, Afghanistan remain endemic for WPV type 1. Israel shifted to all inactivated immunization schedule in 2004.
India is going to introduce IPV from 1st November 2015

Keywords: Polio virus, Endgame, IPV.

Introduction
World Health Assembly in 2012 declared a polio eradication and Endgame strategic plan 2013-2018.
This plan includes introduction of at least one dose of inactivated polio vaccine (IPV) as a strategy to mitigate the potential risk of re- emergence of type 2 strains from OPV.

Epidemiology
Polio is an acute communicable disease caused by any 1 of three poliovirus serotypes (types 1, 2, 3). Route of spread for this virus is faecal- oral and oral to oral in places of poor oral hygiene.
In 1988 annual global burden of paralytic polio was > 350000 cases with wild type virus in more than 125 countries. WHA (world health assembly) resolved to eradicate polio by year 2000 and Global Polio Eradication Initiative (GPEI) was established. Worldwide sustained use of polio vaccine since 1988 has led to precipitous drop by >99% and no of endemic countries from 125 to 3.
Globally last case of polio caused by circulating WPV type 2 occurred in India in 1999. Nigeria, Pakistan, Afghanistan remain endemic for WPV type 1. Israel shifted to all inactivated immunization schedule in 2004.

India is going to introduce IPV from 1st November 2015.
Pathogen and Disease
Polio virus is RNA virus from picornaviridae family with single stranded genome. Incubation period is 7-10 days.
Paralytic polio occurs when polio virus enters CNS and replicates in anterior horn cells.
Typical clinical manifestation is acute flaccid paralysis affecting limbs, usually asymmetric, sensation remain intact

Immunity
Humoral and mucosal immunity protect against polio. Mucosal immunity decreases replication and excretion of virus. Individuals with B cell disorder are at increased risk for paralytic polio manifestations.

Vaccine
OPV is composed of live attenuated polioviruses.
Several forms are available:
- Trivalent (topv); against types 1,2,3
- Bivalent (bopv); against type 1 and 3
- Monovalent (mopv 1 & mopv 3)

The eradication of WPV2 in 1999 coupled with continuing problem of neurovirulent circulating type 2 vaccine derived polioviruses led to the recommendation that there should be coordinated global cessation of use of type 2 component of OPV.
The only serious adverse effect of OPV is vaccine associated paralytic polio and vaccine derived polioviruses.
After vaccination during first 1-3 weeks following vaccination the majority of non-immune recipients shed OPV in nasopharyngeal secretions and faeces. It provides collateral benefit of protecting non-immune individuals.
Significance of 0 dose of OPV is that it also prevents VAPP because of presence of maternally derived antibodies. Immunity to polio virus is lifelong. Since OPV vaccine does not interfere with other vaccines it can be administered with other vaccines.

Inactivated Polio Vaccine
IPV is made from selected WPV strains- Brunhilde type 1, MEF type 2, Saukett type 3 grown in vero cell culture.
Administered by subcutaneous or intramuscular injection. Very safe vaccine when given alone or with other vaccines.
Highly effective in stimulating circulating antibody responses.
IPV is less effective than OPV in providing gut immunity. IPV provides lifelong immunity.

Vaccination with Opv plus Ipv

Who no longer recommend OPV only schedule. For all countries using OPV only at least 1 dose of IPV should be added. Primary purpose of IPV is to maintain immunity against type 2 poliovirus during and after planned global withdrawal of OPV 2 and switch from topv to bopv. Adding an IPV dose will boost both humoral and mucosal immunity against poliovirus type 1 and 3.

Schedule

0 OPV dose at birth. Then at 6, 10 & 14 week OPV1, OPV2 & OPV3+ IPV. Sequential IPV-OPV schedule in countries with high immune coverage and low importation risk. IPV only schedule in countries where high immune coverage and lowest risk of both WPV importation and transmission. Countries with risk of importation should not switch to IPV only schedule and should continue with 3 opv and 1 ipv.

References

1. WHO guidelines published on polio
2. Internet references