CLIPPINGS

Theme: Polio Eradication

Integrating Vitamin A Supplementation into Polio Campaigns (*Vaccine.2016 Jun 27.doi:10.1016/j.vaccine.2016.05.056*)

Vitamin-A deficiency (VAD) is a public health problem that affects children in developing countries. Findings of best practices assessment conducted by WHO Regional Office for Africa in 2014 and 2015 in Angola, Chad, Cote d'Ivoire, Tanzania and Togo were reviewed, that noted integration of vitamin-A with polio as a best practice. VAD in 2004 ranged from 35% in Togo to as high as 55% in Angola. All five countries integrated vitamin-A supplementation in at least one campaign in 2013-2014, and all achieved over 80% coverage for vitamin-A supplementation when it was integrated with polio.

Comment: VAD is still a problem in weaker sectors of society in developing countries; integration of vitamin-A supplementation in at least one campaign in a year seems to be novel strategy to improve vitamin-A nutriture.

Determination of Depth-dependent Intradermal Immunogenicity of Adjuvanted Inactivated Polio Vaccine Delivered by Microinjections (*Pharma Res.2016 Jun 17.doi: 10.1007/s11095-016-1965-6*)

This study investigated the depth-dependent intradermal immunogenicity of inactivated polio vaccine (IPV) delivered by depth-controlled microinjections via hollow microneedles (HMN), and to investigate antibody response enhancing effects of IPV immunization adjuvanted with CpG oligodeoxynucleotide 1826 (CpG) or cholera toxin (CT). A novel applicator was used to immunize rats intradermally with monovalent IPV serotype-1 (IPV1) at injection depths ranging from 50 to 550 ìm, or at 400 ìm for CpG and CT adjuvanted immunization, which were compared to intramuscular immunization. No differences in IgG titers were observed as function of injection depth; however IgG titers were significantly increased in the CpG and CT adjuvanted groups (7-fold).

Comments: CpG and CT could be used as potent adjuvants for IPV, both intradermal and intramuscular immunization.

A Phase III Randomized, Double-blind, Clinical Trial of an Investigational Hexavalent Vaccine Given at 2, 4 and 11-12 Months (*Vaccine. 2016; 34: 3810-6*)

DTaP5-HB-IPV-Hib is a new investigational, fully-liquid, combination vaccine designed to protect against 6 infectious diseases, including 5 pertussis antigens and OMPC instead of PT as conjugated protein for Hib component. This multicenter, double-blind, comparator-controlled, Phase III study conducted in Sweden, Italy, and Finland. A total of 656 participant in study Group received the investigational hexavalent vaccine (DTaP5-HB-IPV-Hib), and 659 participants in control Group received Infanrix-hexa (DTPa3-HBV-IPV/Hib) at 2, 4 and 11-12 months of age. Immune responses to all vaccine antigens post-toddler dose were non-inferior in the DTaP5-HB-IPV-Hib Group as compared to the Control Group. Early Hib responses were superior in comparison to controls.

Comments: DTaP5-HB-IPV-Hib could provide a new hexavalent option for pediatric combination vaccines, aligned with recommended immunizations.

Humoral and Intestinal Immunity Induced by New Schedules of bOPV and One or Two Doses of IPV in Latin American Infants (*Lancet. 2016:388:158-69*)

In this multicenter trial, five groups were randomly assigned 1:1:1:1 to four permutations of schedule: groups-1 and 2 (control groups) received bOPV at 6, 10, and 14 weeks; group-3 received tOPV at 6, 10, and 14 weeks; group-4 received bOPV plus one dose of IPV at 14 weeks; and group-5 received bOPV plus two doses of IPV at 14 and 36 weeks. Type 2 seroconversion occurred in 19 of 198 infants (9·6%, 95% CI 6·2-14·5) in the bOPV-only groups, 86 of 88 (97·7%, 92·1-99·4) in the tOPV-only group ($p<0·0001$ vs bOPV-only), and 156 of 194 (80·4%, 74·3-85·4) infants in the bOPV-one dose of IPV group ($p<0·0001$ vs bOPV-only). After a bOPV-two IPV schedule, all 193 infants (100%, 98·0-100; $p<0·0001$ vs bOPV-only) seroconverted to type 2.

Comments: After one or two IPV doses in addition to bOPV, 80% and 100% of infants seroconverted, respectively, and the vaccination induced a degree of intestinal immunity against type 2 poliovirus.

Multiplex RT-PCR Assay for the Identification of Recombination types at different genomic regions of vaccine-derived polioviruses (*Virus Genes. 2016;52:453-62*)

In the present study, ten Sabin isolates derived from OPV vaccinees and environmental samples were studied in order to identify recombination types located from VP1 to 3D genomic regions of virus genome. The experimental procedure that was followed was virus RNA extraction, reverse transcription to convert the virus genome into cDNA, PCR and multiplex-PCR using specific designed primers able to localize and identify each recombination following agarose gel electrophoresis. This multiplex RT-PCR assay allows for the immediate detection and identification of multiple recombination types located at the viral genome of OPV derivatives.

Comments: After the eradication of wild PVs, the remaining sources of poliovirus infection worldwide would be the OPV derivatives. As a consequence, the immediate detection and molecular characterization of recombinant derivatives are important to avoid epidemics due to the circulation of neurovirulent viral strains.

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