Polio vaccines. Grading tables

Table II: Birth dose of OPV

Settings: Global

Question: What is the evidence that the immunological response to OPV schedules starting with a birth dose is at least as immunogenic as otherwise comparable OPV schedules starting at 6-8 weeks of age?

Conclusion: High scientific evidence that OPV schedules starting with a birth dose are at least as immunogenic as otherwise comparable OPV schedules starting at 6-8 weeks of age.

Quality assessment						
No of studies	Design	Limitations	Inconsistency	Indirectness	Imprecision	Quality
1 5	Randomized controlled Observational	No serious No serious	No serious No serious	No serious No serious	No serious No serious	High

**Osei-Kwasi M et al (1995)* conducted a randomized, controlled trial of antibody levels and seroconversion rates among 452 infants who received trivalent oral poliovirus vaccine at 6, 10, and 14 weeks of age, with or without a preceding birthdose. At 10, 14, and 18 weeks of age, the levels of poliovirus neutralizing antibodies as well as seroconversion rates were consistently higher among those who received the additional birth dose (final seroconversion rates against poliovirus types 1, 2, and 3 were 83.5%, 91% and 83%, respectively, for the test group and 75%, 83.2%, and 79.1%, respectively, for the control group). Seroconversion rates as well as antibody levels were highest in infants with low maternal antibodies.

Bhaskaram P et al (1997) showed that administration of the additional dose in the newborn period significantly improved seropositivity and seroconversion rates compared to the conventional 3 or 5 dose schedules. (Exact figures not provided in summary).

Sutter RW et al (1997) studied the sequential use of inactivated polio vaccine followed by oral vaccine in Oman and found no difference in seroprevalence and geometric mean titers between those who had and those who had not received a birth dose.

Jain PK et al (1997) found that adding OPV (or IPV) at birth to the conventional schedule markedly increases the seroconversion rates, and that a significantly greater number of children who received some vaccine at birth (IPV or OPV) were protected against poliomyelitis by 6 weeks age as compared to those who received no immunization at birth.

Khare S et al (1993) compared the sero-conversion rates among 87 infants (Group A) who were OPV-vaccinated on day 3 after birth in addition to receiving the conventional 3OPV doses starting at 6 weeks of age, whereas 55 infants (Group B) received the conventional 3 OPV doses only. It was found that administration of OPV on 3rd day of life leads to sero-conversion in 15.3% of infants to all three polio virus types by the age of 6 weeks, and highest sero response was seen for polio virus type 1. Sero-conversion in group A was significantly more than sero-conversion in group B after the administration of last dose

Weckx LY et al (1992) evaluated the neutralizing antibody response of trivalent OPV among 85 neonates in São Paulo, divided randomly into two groups. Group A received tOPV at birth and at 2, 4, and 9 months of age, and Group B received tOPV at 2, 4 and 6 months of age, only. Group A showed a superior response to poliovirus type 3. After 1 year, there were 3.7% susceptibles (lacking neutralizing antibody) in Group A and 25.9% in Group B. In Group A, excellent seroconversion rates were obtained from the third dose onward.

Literature

Osei-Kwasi M, Afari EA, Mimura K, Obeng-Ansah I, Ampofo WK, Nkrumah FK. Randomized, controlled trial of trivalent oral poliovirus vaccine (Sabin) starting at birth in Ghana. Bull World Health Organ. 1995;73(1):41-6.

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