Table II: Birth dose of OPV

Population : Immunocompetent individuals
Intervention: Oral poliovirus vaccine
Comparison: No vaccination
Outcome : Cases of polio

PICO 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?				
			Rating	Adjustment to rating
Quality Assessment	No of studies/starting rating		2 RCT/ 5 observational[1]	4
	Factors decreasing confidence	Limitation in study design	None serious	0
		Inconsistency	None serious	0
		Indirectness	None serious	0
		Imprecision	None serious	0
		Publication bias	None detected	0
	Factors increasing confidence	Strength of association/ large effect	Applicable[2]	(+1)
		Dose-response	Not applicable	0
		Antagonistic /mitigated bias and confounding	Not applicable	0
	Final numerical rating of quality of evidence			**4**
Summary of Findings	**Statement on quality of evidence**			Evidence supports a high degree of confidence that the true effect lies close to that of the estimate of effect on health outcome.
	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.

[1] Osei-Kwasi M et al (1995) conducted a RCT among 452 infants who received trivalent oral poliovirus vaccine with or without birthdose. 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). Bhaskaram P et al (1997) showed that administration of the additional birthdose significantly improved seropositivity and seroconversion rates compared to the primary 3/5 dose schedules. Sutter RW et al (1997) studied sequential use of inactivated polio vaccine followed by oral vaccine. No difference in seroprevalence and titers between birth dose/no birth dose were seen. Jain PK et al (1997) found that adding OPV (or IPV) at birth to the primary schedule increased seroconversion rates. A significantly greater number of children who received IPV or OPV at birth were protected compared to those who received no immunization. Khare S et al (1993) compared the seroconversion rates among infants who were OPV-vaccinated on day 3 after birth in addition to receiving the conventional 3OPV doses starting at 6 weeks of age, whereas infants received the conventional 3 OPV doses only. It was found that administration of OPV on 3rd day of life leads to seroconversion in 15.3% to all three polio virus types by 6 weeks, and highest seroresponse was seen for polio virus type 1. Seroconversion in the first group was significantly higher than sero-conversion in the second group after the administration of last dose. Weckx LY et al (1992) evaluated the neutralizing antibody response of trivalent OPV among 85 neonates. 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. Group A showed a superior response to poliovirus type 3. After 1 year, there were 3.7% 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.

[2] Studies in Nigeria and India (Sutter et al 2010 and Mangal et al 2014) evaluated the immunogenicity of bivalent OPV (bOPV) compared to tOPV and found that seroconversion rates to poliovirus types 1 and 3 following immunization with bOPV were significantly higher than those induced by tOPV. Therefore the protection conferred by bOPV is assumed superior to tOPV. A schedule of polio vaccine at birth (bOPV), 6 weeks (tOPV or bOPV), 10 weeks (tOPV or bOPV), and 14 weeks (bOPV, with or without IPV), showed excellent immunogenicity to poliovirus types 1 and 3 (Sutter et al 2015).

References

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