

Table I: Efficacy/effectiveness of oral poliovirus vaccine (OPV) against clinical poliomyelitis**Population** : Immunocompetent individuals**Intervention:** Oral poliovirus vaccine**Comparison** : No vaccination**Outcome** : Cases of polio

PICO Question: What is the evidence that oral poliovirus vaccine (OPV) protects against clinical poliomyelitis?				
			Rating	Adjustment to rating
Quality Assessment	No of studies/starting rating		7 observational ¹	2
	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 ²³	+2
		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			The success of the OPV in curtailing polio epidemics and reducing or even eliminating the disease in endemic countries provides overwhelming evidence of the effectiveness of polio vaccines, in particular OPV.

¹Dong DX et al (1984) reported that prior to the vaccination program in 1960-64, average annual incidence of poliomyelitis was 3.18 cases/100,000 yet dropped to 0.80/100,000 in 1976-80 and to 0.47/100,000 in 1981 after OPV introduction. Data from a large investigation of poliovirus neutralizing antibody in health populations in China showed clear elevation of antibody levels as well as good immunologic effectiveness for OPV. Sutter RW et al (1991) investigated an outbreak in Oman. 3 doses of OPV reduced the risk of paralysis by 91%. Heymann DL et al (1987) provided proof of the considerable herd immunity effects of OPV in a study in Cameroon. Incidence of paralytic polio decreased by 85%, although only 35% of children 12-13 months of age had received 3 doses of the vaccine. Kim-Farley J et al (1984) conducted a case control study during an outbreak in Taiwan involving 1031 cases of paralytic polio. Vaccine efficacy was estimated at 82% after one dose, 96% after two doses and 98% after three or more doses. Deming M S et al (1992) conducted a case-control study in The Gambia. In a matched analysis of 195 cases and 839 controls, efficacy of 3 or more doses of trivalent oral polio vaccine was 72% (95% confidence interval(CI)57-82%). Efficacy of 3 or more doses in 1- to 2-year-old children, in whom the determination of vaccination status was considered to be more accurate than in older children, was 81% (95% CI: 66-90%).

²Strong evidence of high vaccine effectiveness based on the consistent results of clinical trials and the overwhelming reduction in the incidence of polio following world-wide vaccination efforts.

³Studies in Nigeria and India (Sutter et al 2010 and Mangal et al 2014) evaluated the immunogenicity of 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. Non-inferiority was further shown for the bOPV-containing schedules compared with all-IPV and IPV-bOPV schedules (O’Ryan M, et al). Further IPV-bOPV and bOPV only provided high levels of seroconversion (Sutter et al 2015).

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