Table IV: Efficacy/effectiveness of inactivated polio vaccine (IPV) against clinical poliomyelitis

Population : Immunocompetent individuals
Intervention: IPV
Comparison: No vaccination
Outcome : Cases of poliomyelitis

PICO Question: What is the evidence that inactivated poliovaccine (IPV) protects against clinical poliomyelitis?				
			Rating	Adjustment to rating
Quality Assessment	No of studies/starting rating		2 RCT/ 6 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	Not applicable	0
		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 IPV protects against clinical poliomyelitis.

[1] Francis T et al (1955, as cited by Plotkin S et al 2008) conducted a major field trial in the USA in 1954 that involved about 400 000 children, randomly assigned to IPV or placebo. A related, non randomized study by the same authors involved another 200 000 children who were vaccinated and observed together with unvaccinated children. Altogether, 71 cases of paralytic polio occurred in vaccinated individuals versus 445 among unnvaccinated individuals. In the placebo controlled trial, 11 cases of polio occurred among vaccines as compared to 70 cases in the control group. The calculated vaccine efficacy was 80%-90% against paralytic polio and 60%-70% against all types of polio. Melnick JL et al (1961) calculated an efficacy of 96% through two polio seasons in Houston, Texas. Stoeckel P et al (1984) studied the protective efficacy IPV among children in a rural area of Senegal. During the 3 year observation period following vaccination, no case of polio occurred in the vaccinated group. During the preceding 13 years an average of 3.9 cases of paralytic poliomyelitis (range, one to 13) were observed annually in the test region. Centers for Disease Control and Prevention (1988) In a case-control analysis following a polio type 1 outbreak in Senegal, two doses of combined dtwP-IPV conferred 89% (96% CI 62-97) protection. Serological studies of patients who have received 2 doses of N-IPV have seroconversion rates ranging from 90% to 100% for each of the three polioviruses. John T (1992) found 92% efficacy of IPV. Varughese PV et al (1989) found more than 90% vaccine efficacy following the introduction of this vaccine in Canada. Robertson S et al (1994) conducted a case control study in Oman during an outbreak involving 118 cases of poliomyelitis type 1. They analyzed 70 cases and 762 aged-matched controls to estimate the immunogenicity and clinical efficacy of OPV. They reported that 3 doses of OPV reduced the risk of paralysis by 91%. Cases and controls had similar type 1 neutralizing antibody profiles that suggested widespread type 1 poliovirus transmission. A schedule of three doses of IPV at 6, 10, 14 weeks showed excellent immunogenicity (Sutter et al 2015).

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