Table III: Sabin Inactivated Poliovirus Vaccine (sIPV)

Question necessary for recommendation development: Can Sabin Inactivated Poliovirus Vaccine (sIPV) be used interchangeably with Salk-based IPV (wIPV), in other words, is it equally immunogenic? What is the immunogenicity of sIPV compared to wIPV in immunocompetent children?				
			Rating	Adjustment to rating
Quality Assessment	No of studies/starting rating		8 RCTs[1]	4
	Factors decreasing confidence	Limitation in study design	None serious[2]	0
		Inconsistency	None serious	0
		Indirectness	None serious	0
		Imprecision	None serious	0
		Publication bias	None detected	0
	Factors increasing confidence	Strength of association	Not applicable	0
		Dose-response	Not applicable	0
		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 level of confidence that the true effect lies close to that of the estimate of the effect on the health outcome.
	Conclusion			sIPV is shown to provide non-inferior immunogenicity to wIPV and has a comparable safety profile.

Population : Immunocompetent children
Intervention : sIPV
Comparison : wIPV (conventional IPV)
Outcome : Immunogenicity for type 2 poliovirus

[1] Resik et al (2014) studied sIPV, aluminum adjuvanted dose sIPV and wIPV in adult males. No serious adverse events were reported attributed to trial interventions after 6 months. One month after vaccination, all vaccination groups experienced boosted immune responses against poliovirus types 1-3 between 90% and 100%. Verdijk et al (2013) also studied sIPV, aluminum adjuvanted dose sIPV and wIPV in adult males for safety and immunogenicity. Sabin-IPV and Sabin-IPV adjuvanted with aluminum hydroxide administered as a booster dose were equally immunogenic and safe as conventional IPV. Cramer et al (2020) conducted a phase 2/3 study that demonstrated optimal efficacy in a low-dose sIPV schedule and manufacturing lot consistency. sIPV was as safe and immunogenic as wIPV. Capeding et al (2021) showed the seroconversion rates for Sabin and wild strains of the 3 serotypes after the 3-dose primary series were 95.8% to 99.2% in the lot-combined sIPV group and 94.8% to 100% in the wIPV group, proving the noninferiority of sIPV compared to wIPV. Liao et al (2016) administered sIPV or wIPV (1:1 randomization) to infants aged 60-90 days. Seroconversion rates for sIPV recipients were 100%, 94.9%, and 99.0% (types I, II, and III, respectively) and 94.7%, 91.3%, and 97.9% for wIPV. This shows non-inferiority of sIPV. Sun et al (2017) demonstrated that sIPV vaccine can induce protective antibodies against currently circulating and reference wild poliovirus strains and most vaccine-derived poliovirus strains, with rare exceptions. Hu et al (2019) onducted a phase 3 trial showing sIPV with an immunogenicity profile noninferior to that of the conventional IPV and had a good safety profile in healthy infants. Jiang et al (2019) conducted a phase IV study and concluded that sIPV exhibits good lot-to-lot consistency and safety in large-scale populations; thus, it is qualified to serve as one of the vaccines for use in eradicating all wild and vaccine-derived polioviruses worldwide in the near future.

[2] The study by Cramer et al (2020) was not powered for statistical comparisons, so all comparisons were intended to be descriptive. Resik et al (2014) did not report status of participant/personnel blinding. This was not seen as a limitation that leads to downgrading of the evidence.

References

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