Table I: Addition of a second inactivated poliovirus vaccine (IPV) dose to routine immunization with bivalent oral poliovirus vaccine (bOPV)

**Population**: Immunocompetent children

**Intervention**: 2 doses IPV + bOPV

**Comparison**: 1 dose of IPV + bOPV

**Outcome**: Immunogenicity against type 2 poliovirus

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1 Five RCTs evaluated the effect of a second dose of IPV in a bOPV+IPV schedule. Sutter et al (2015) conducted an open label, randomised controlled trial in India enrolling 900 newborn infants. In bOPV + 2IPV group the seroconversion after 18 weeks was 99.4%, (96.5–100) for type 1, 78.1% (70.7–84.3) for type 2 and 98.7% (95.4–99.8) for type 3. Qui et al (2017) conducted a randomized controlled non-inferiority clinical trial including 504 infants in the study. 30 days after the last inoculation, seroprotection in 2IPV + bOPV receiving arm was 85 (98.84, 93.69–99.97) for type 1, 85 (98.84, 93.69–99.97) for type 2 and 86 (100.0, 95.80–100.0) for type 3. Asturias et al (2016) performed an open label randomized controlled trial in Latin American infants assessing humoral (ie, seroconversion) and intestinal immunity (i.e., viral shedding) of a bOPV + 2IPV schedule. After a bOPV–two IPV schedule, seroconversion rates reached 100% (98.0–100) to type 1, 100% (98.0–100; p<0.0001 vs bOPV only) to type 2, and 99.5% (97.1–99.9) to type 3. Tagbo et al (2021) conducted a randomized controlled clinical trial in Nigerian children assessing gains in immunity with an addition of a second dose of IPV to a bOPV/IPV schedule. Seroconversion rates for type 1, 2 and 3 were 98.9% (95% confidence interval [CI], 96.7–99.8), 72.0% (95% CI, 66.2–77.3) and 98.1% (95% CI, 88.2–94.8) with one IPV dose compared to 89.6% (95% CI, 85.4–93.0), 95.9% (95% CI, 92.8–
97.9) and 98.5% (95% CI, 96.3–99.6) with two doses. Note the significant increase in type 2 seroconversion with 2 IPV doses. O’Ryan et al (2015) performed a randomized, controlled, open-label, non-inferiority study assessing IPV administration in a sequential schedule with bOPV. In an IPV-IPV-bOPV schedule, type 1 seroconversion was 100% (97.9–100.0), type 2 was 100% (97.9–100.0) and type 2 96.0% (92.0–98.0).

An open label design was conducted in all studies since the vaccine delivery could not be masked (oral vs injectable). Only Asturias et al (2016) had blinded investigators.

References


