ABSTRACT

Pneumonia is the leading cause of death in HIV-infected children. Two leading bacterial causes, *Haemophilus influenzae* type b (Hib) and *Streptococcus pneumoniae* are vaccine preventable. The Hib conjugate vaccine (HibCV) and the pneumococcal conjugate vaccines (PCV) are recommended for children with HIV; however, they are not part of programs in India. We looked at the impact of these vaccines in high-risk families, where both adult and children have HIV.

We conducted a prospective cohort study from 2012-2014 in West Bengal India, with two cohorts: families affected by HIV, and those uninfected. HIV-infected children 2-15 years got two doses of the HibCV (*Sii-HibPRO*) and one dose of PCV13 (*PREVNAR13*). HIV-uninfected children 2-5 years received one dose of HibCV and PCV13 as catch-up. Nasopharyngeal swabs were collected from children and parents at baseline and at multiple times post vaccination (total six swabs). Both vaccines were well tolerated in both cohorts.

125 HIV-infected children and their parents, and 44 HIV-uninfected children and their parents, participated in the HibCV study. Baseline Hib carriage in HIV-infected children was 13.8% and dropped to 1.8% at 20 months following HibCV (p=0.002). In uninfected children, baseline carriage was 4.5% and decreased to 2.3%. 76% of HIV-infected children mounted an anti-Hib-PRP antibody response of >1 µg/dl following HibCV. HIV infected parents had nine times increased risk of Hib carriage if their child remained colonized. Anti-Hib-PRP antibody level >3.3 µg/dl was found optimum to prevent carriage in HIV-infected children.

113 HIV-infected and 47 uninfected children received one dose of PCV13. There was no difference in the acquisition of vaccine type (VT) isolates in HIV-infected (4.4%) or uninfected children (4.5%) post PCV13; however, children with HIV had decreased clearance of VT strains (11.4% vs. 4.4% p=0.05). Children with higher nadir CD4 counts before antiretroviral therapy (ART) were less likely to have VT colonization post PCV13.

Fifteen months after study completion, 99 parents from both HIV-infected and uninfected cohorts were interviewed; 89% were strongly willing to recommend the vaccines to others, and 87% were willing to pay for PCV at a subsidized cost.