

Randomized Trial of HBV Revaccination in MSM Born in the Neonatal Vaccination Era

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BACKGROUND

- Implementation of universal neonatal vaccination program against hepatitis B virus (HBV) has significantly reduced HBV seroprevalence in general population and people living with HIV (PLWH). Optimal strategy of revaccination remains unknown among people whose immunity has waned after neonatal vaccination.
- This randomized controlled trial investigated the serological responses to three standard-dose (SD, 20-µg) or double-dose (DD, 40-µg) HBV revaccination among HIV-positive and HIV-negative men who have sex with men (MSM).

METHODS

- Inclusion criteria: MSM who were born after 1 July 1986 and tested negative for HBsAg and anti-HBc with anti-HBs titer <10 mIU/ml were eligible for enrollment.
- Exclusion criteria: aged <20 years or receiving chemotherapy or immunosuppressants within 30 days prior to screening, or PLWH who not on stable ART.
- Randomization: 1:1 (stratified by CD4 count for PLWH)
- Intervention: SD (20-µg) or DD (40-µg) HBV vaccination (Engerix-B) delivered at Week 0, 4, 24.
- Outcomes:
 - Primary end point: serological response at Week 28 (defined as an anti-HBs titer ≥10 mIU/ml)
 - Secondary end points: high-titer response (anti-HBs ≥100 mIU/ml) at Week 28 and 48, serological response at Week 48, and adverse effects.

Table 1. Characteristics of participants

	SD (20µg) group (n=178)	DD (40µg) group (n=175)	p-value
Age, mean (SD), years	27.8 (3.4)	27.8 (3.4)	0.920
Age of PLWH, mean (SD), years	28.1 (3.4)	28.5 (3.2)	0.355
PLWH, n (%)	124 (69.7)	125 (71.4)	0.798
on ART, n (%)	123 (99.2)	123 (98.4)	0.992
CD4 count ≥500 cells/mm ³ , n (%)	84 (68.3)	86 (68.8)	0.581
Viral suppression (<50 cp/ml), n (%)	115 (93.5)	120 (96.0)	0.408
Anti-HBs titer at baseline, Median (IQR), mIU/ml	2.4 (1.9-3.9)	2.4 (2.1-4.7)	0.507
<2.5 mIU/ml, n (%)	119 (66.9)	109 (62.3)	0.370
Syphilis, n (%)	41 (24.3)	55 (32.7)	0.092
HCV, n (%)	8 (4.7)	10 (6.0)	0.637

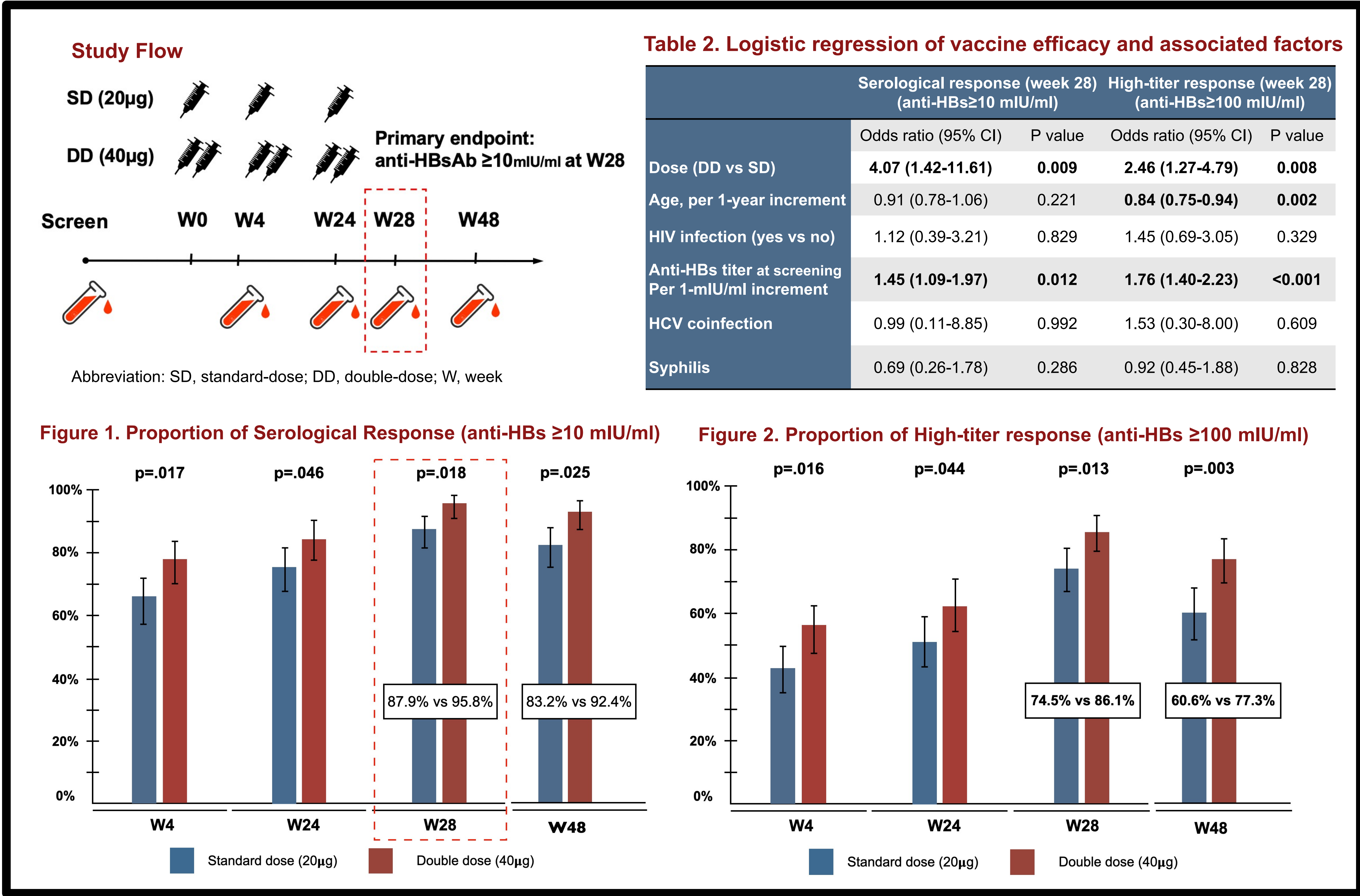


Figure 3. Subgroup analysis of the double-dose revaccination on serological responses at week 28

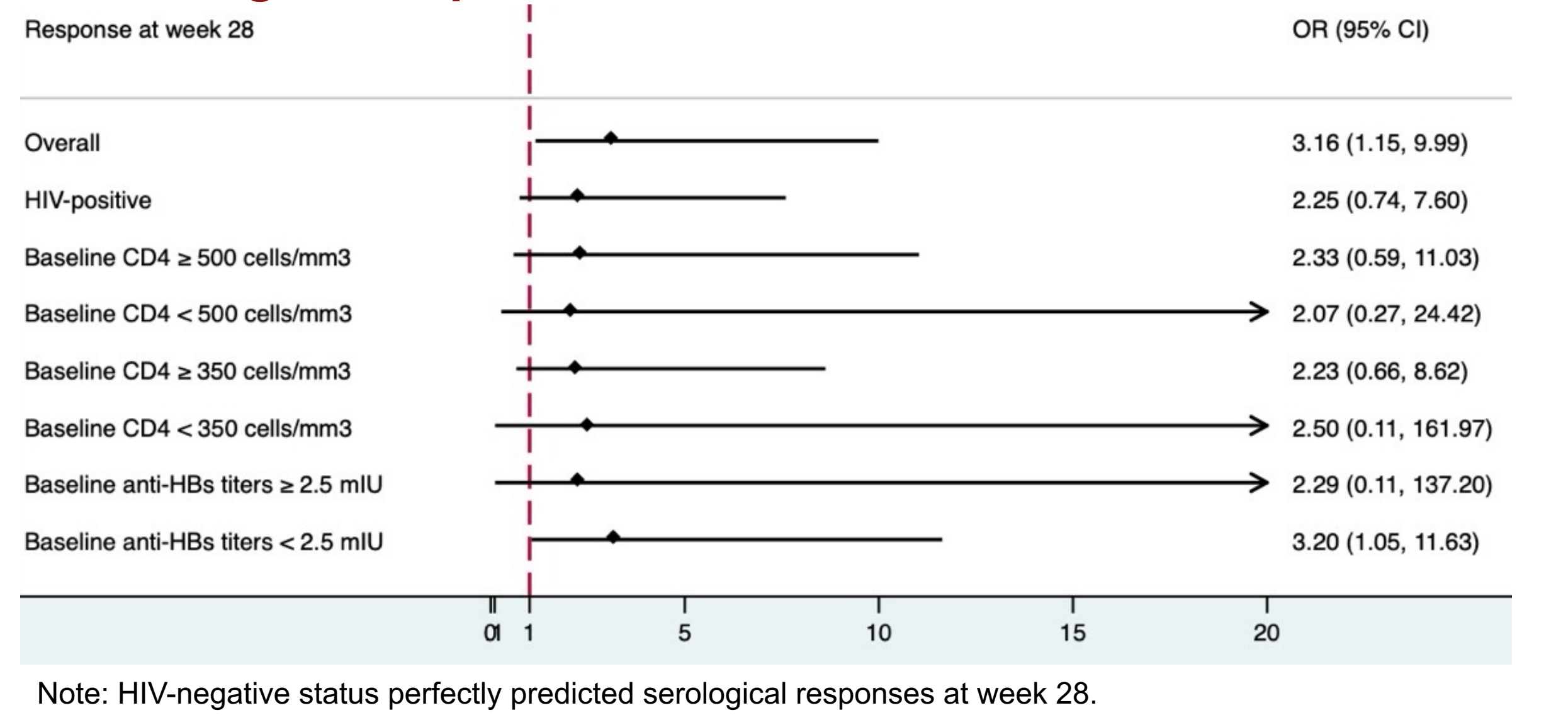
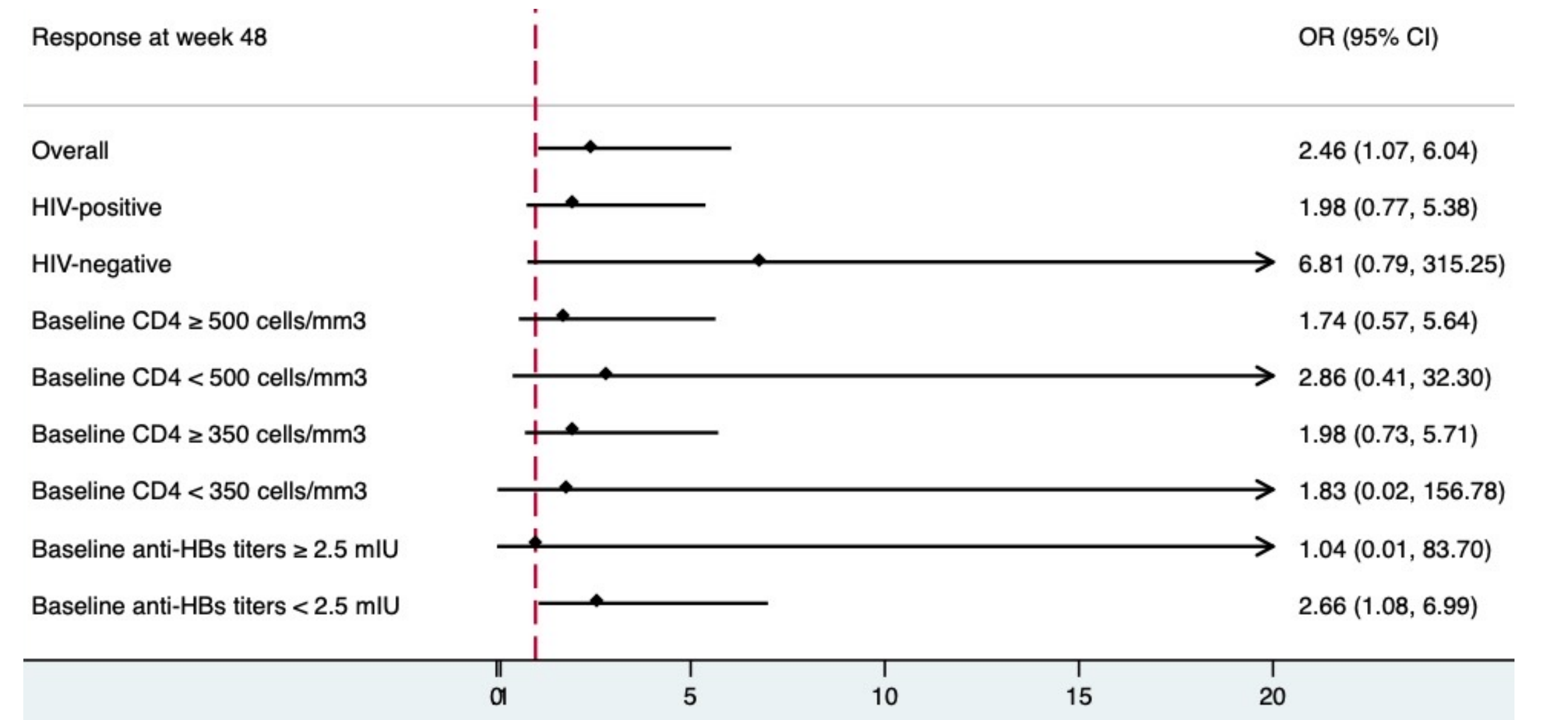


Figure 4. Subgroup analysis of the double-dose revaccination on serological responses at week 48



RESULTS

- From September 2017 to January 2022, 249 (71%) HIV-positive MSM and 104 (29%) HIV-negative MSM with a mean age of 27.8 years were enrolled with 178 and 175 in two arms.
- The two groups were well balanced in terms of clinical characteristics. In PLWH, 70% had CD4 counts ≥ 500 cells/mm³ and 95% were virally suppressed (HIV RNA load <50 copies/ml) (Table 1).
- The serological response rates at Week 28 were 87.9% and 95.8% for standard-dose and double-dose group (p=0.018, Figure 1), respectively; and the respective high-titer response rate was 74.5% and 86.1% (p=0.013, Figure 2).
- At Week 48, the high-titer response rate for double-dose group was higher than that for standard-dose group (77.3% vs 60.6%, p=0.003, Figure 2).
- In multivariate logistic regression analysis, double-dose HBV revaccination and baseline anti-HBs titer were significantly associated with serological response at Week 28 (Table 2). For high-titer responses, double-dose HBV revaccination, younger age, and baseline anti-HBs titer were significantly associated with serological response at Week 48.
- Only one (0.5%) severe AE (headache) occurred in the double-dose group, which resolved without sequelae.

CONCLUSIONS

- Revaccination with three double doses of HBV vaccine results in higher serological responses than with three standard-doses of HBV vaccine among MSM who were born in the era of universal neonatal HBV vaccination.
- Virally suppressed PLWH with high CD4 counts who born in the neonatal vaccination era had similarly responses after revaccination as healthy MSM.

ADDITIONAL KEY INFORMATION

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