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Seroconversion and antibody persistence after yellow fever vaccination in people living with HIV: impact of baseline HIV viral load and yellow fever seropositivity

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Background: We aimed at determining key factors for seroconversion after yellow fever (YF) vaccine in people living with HIV (PLWH) and the role of preexisting neutralizing antibodies (NAbs) at vaccination.

Materials and Methods: A retrospective cross-sectional study in two Belgian AIDS Reference Center. Plasma samples from three timepoints were selected: Timepoint 0 in the year before administration of the YF vaccine, Timepoint 1 in the year following the YF vaccine, Timepoint 2 more than one year after the YF vaccine. Plasma samples were analyzed by plaque reduction neutralization test (NAbs≥1/10). A boosted immune response was defined as a 4-fold increase in serologic titers following revaccination.

Results: Of the 160 PLWH included, protective levels of NAbs were present in 36%, 87% and 72% of subjects at baseline, at a median of 12 months and a median of 96 months after YF vaccination, respectively. Among vaccinees negative for YF NAbs at baseline (n=102), 83% seroconverted. PLWH with undetectable HIV viral load (VL) at baseline were more likely to seroconvert ($p<0{\cdot}01$). A booster response was observed in only 17% of subjects with baseline seropositivity (n=10 out of 58). In multivariate analysis, undetectable HIV VL at vaccination and baseline YF seropositivity were associated with persistent levels of protective NAbs at a median of 8 years after YF vaccination.

Conclusions: Undetectable HIV VL at baseline is associated with high rates of seroconversion. YF seropositivity before revaccination is associated with a higher chance of long term persistent NAbs response, suggesting a benefit of revaccination in PLWH.