

V4 Duration of post-vaccination immunity against yellow fever in adults

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Introduction: Available scientific evidence to recommend or to advise against booster doses of yellow fever vaccine (YFV) is inconclusive. A study to estimate the seropositivity rate and geometric mean titres (GMT) of adults with varied times of vaccination was aimed to provide elements to revise the need and the timing of revaccination.

Objective: To estimate the seropositivity rate and geometric mean titres (GMT) of adults with varied times of vaccination.

Methodology: Adults from the cities of Rio de Janeiro and Alfenas located in non-endemic areas in the Southeast of Brazil, who had one dose of YFV, were tested for YF neutralizing antibodies and dengue IgG. Time (in years) since vaccination was based on immunization cards and other reliable records.

Results: From 2011 to 2012 we recruited 691 subjects (73% males), aged 18-83 years. Time since vaccination ranged from 30 days to 18 years. Seropositivity rates (95%C.I.) and GMT (International Units/mL; 95%C.I.) decreased with time since vaccination: 93% (88%-96%), 8.8 (7.0-10.9) for newly vaccinated; 94% (88-97), 3.0 (2.5-3.6) after 1-4 years; 83% (74-90), 2.2 (1.7-2.8) after 5-9 years; 76% (68-83), 1.7 (1.4-2.0) after 10-11 years; and 85% (80-90), 2.1 (1.7-2.5) after 12 years or more. YF seropositivity rates were not affected by previous dengue infection.

Conclusion: Even though serological correlates of protection for yellow fever are unknown, seronegativity in vaccinated subjects may indicate primary immunization failure, or waning of immunity to levels below the protection threshold. Immunogenicity of YFV under routine conditions of immunization services is likely to be lower than in controlled studies. Moreover, infants and toddlers, who comprise the main target group in YF endemic regions, and populations with high HIV infection rates, respond to YFV with lower antibody levels. In those settings one

booster dose, preferably sooner than currently recommended, seems to be necessary to ensure longer protection for all vaccinees.

Keywords: Yellow Fever Vaccine, Immunogenicity