

Immunogenicity and duration of protection after yellow fever vaccine in people living with human immunodeficiency virus: a systematic review

Charlotte Martin¹, Cristina Domingo², Emmanuel Bottieau³, Dora Buonfrate⁴, Stéphane De Wit¹, Yves Van Laethem¹, Nicolas Dauby^{1, 5, 6}

¹Infectious Diseases Department, Centre Hospitalier Universitaire Saint-Pierre, Université Libre de Bruxelles, Brussels, Belgium, ²Robert Koch Institute, Highly Pathogenic Viruses (ZBS 1), Centre for Biological Threats and Special Pathogens, WHO Collaborating Centre for Emerging Infections and Biological Threats, Berlin, Germany, ³Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium, ⁴Department of Infectious Tropical Diseases and Microbiology, IRCCS Ospedale Sacro Cuore Don Calabria, Negrar, Verona, Italy, ⁵Institute for Medical Immunology, Université Libre de Bruxelles, Brussels, Belgium, ⁶Environmental Health Research Centre, Public Health School, Université Libre de Bruxelles, Brussels, Belgium

Background:

We lack the rationale on which to base the development of a yellow fever (YF) vaccination schedule for people living with human immunodeficiency virus (PLWHIV).

Objectives:

To report on the current evidence regarding the seroconversion rate and the duration of humoral protection after YF vaccine, as well as the impact of revaccination in PLWHIV.

Methods:

Data sources: MEDLINE, Google Scholar, LILACS and Cochrane CENTRAL were searched.

We selected studies on PLWHIV of all ages (including perinatally HIV-infected patients) and all settings (YF endemic and non-endemic zones). Intervention investigated was vaccination against YF, at least once after the HIV diagnosis. The research questions were the seroconversion rate, duration of humoral immunity after YF vaccine and impact of revaccination in PLWHIV. Selected studies were assessed for quality using the Newcastle-Ottawa scale.

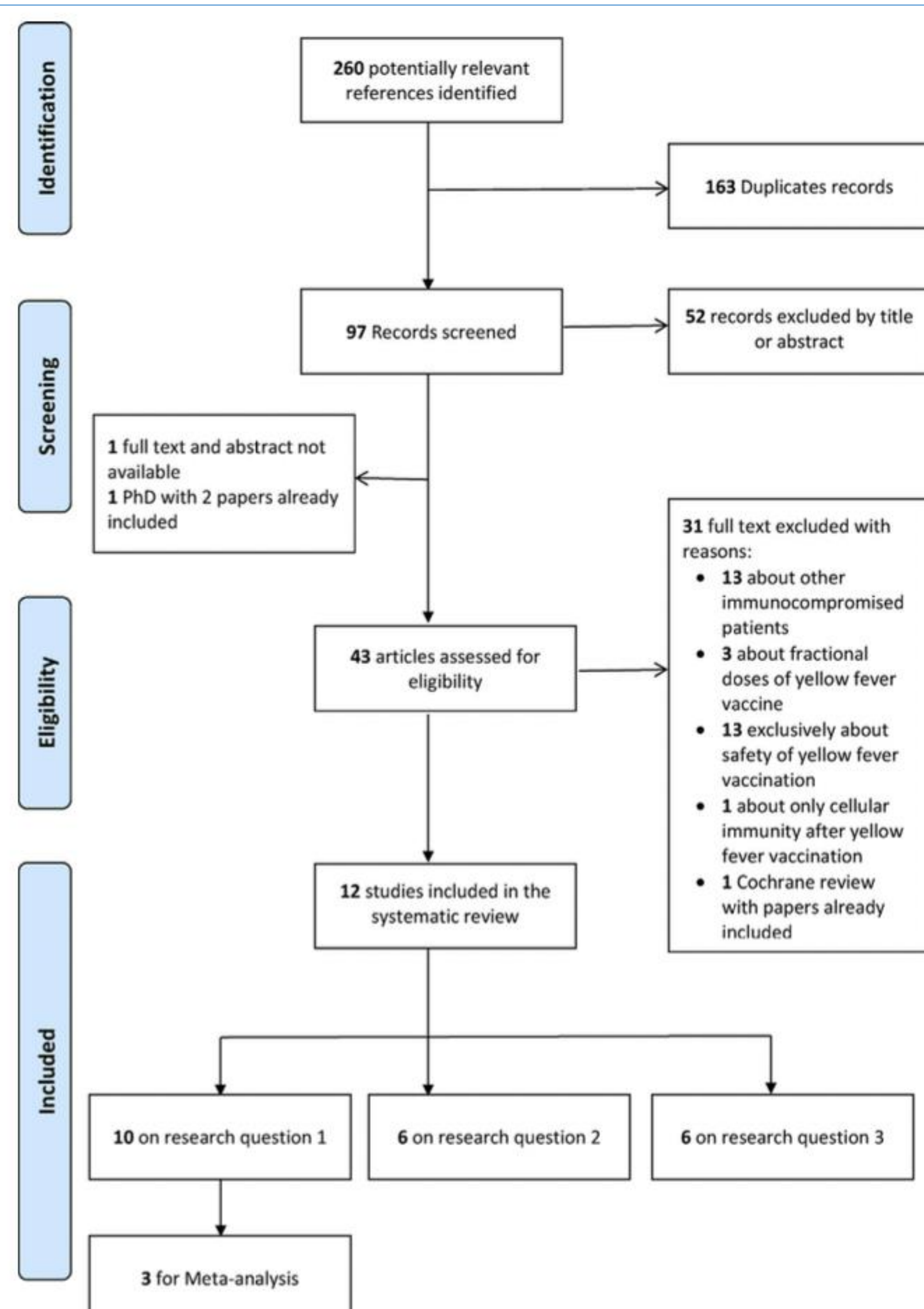


Fig. 1. Flow diagram for search and selection of included studies.

Results:

Ten, six and six studies were selected for the systematic review of each question, respectively. Only one study addressed the first question in perinatally HIV-infected children. The quality of the studies was assessed as Poor (n 16), Fair (n 2) or Good (n 4).

A meta-analysis demonstrated that **97.6%** (95% CI 91.6%-100%) of the included population seroconverted.

Between 1 and 10 years after YF vaccine, reported persistence of neutralizing antibodies was **72%** (95% CI 53.6%-91%), and it was **62%** (95% CI 45.4%-78.6%) more than 10 years after YF vaccine. No conclusions could be drawn on impact of revaccination because of the small number of patients.

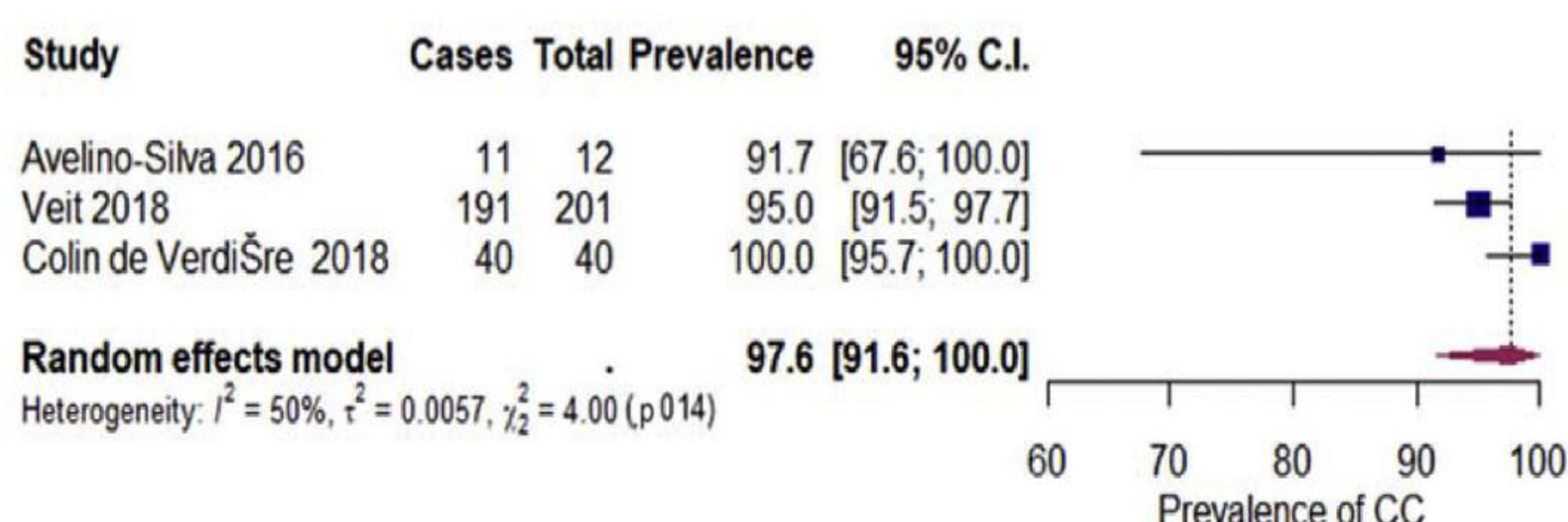


Fig. 2. Forest plots for the seroconversion rate after yellow fever vaccination in people living with human immunodeficiency virus.

Conclusions:

The current evidence regarding seroconversion rate, duration of humoral protection after YF vaccine and impact of revaccination in PLWHIV is limited by the low number and quality of studies. Based on the presently available data, it is difficult to rationally develop yellow fever vaccination guidelines for PLWHIV.