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Letter to the Editor

Is a dose of 17D vaccine in the current context of Yellow Fever enough?

Dear Editor,

The availability of the effective 17D vaccine as well as an eradication program of *Aedes aegypti* dramatically decreased the urban Yellow Fever (YF) incidence in Americas.[1,2] However, in the last decades, the YF transmission was reported outside endemic area (Amazon region), with extension of viral circulation toward to densely populated and highly *Aedes*-infested regions and low vaccination coverage.[3–5]

Since 1990s, Yellow Fever virus (YFV) have been extending its traditional endemic area toward to Southern and Southeastern regions in Brazil.[4] From July 2017, to epidemiological week 2, 2018, 470 YF cases were suspected in Brazil, 35 confirmed, and 20 deaths, with 411 epizootic confirmed.[6]

Besides, the susceptibility and competence of *Ae. aegypti* and *Aedes albopictus* to YFV transmission had been demonstrated and they can become active vectors in YF reemergence[7] in YFV-free regions. The vector may be found in more than 130 countries with around 4 billion people at risk of introduction and spread of infection,[8] highlighting the concern for the future about the YFV outbreaks. Considering this epidemiological scenario, the area to vaccine coverage has been expanding, following the current recommendation of World Health Organization (WHO), which a single dose of 17D vaccine confers life-long protection against YF.[9]

This decision is polemic for a series of reasons. Firstly, vaccine failures have already been demonstrated.[3,10] Neutralizing antibodies levels may decrease significantly in adults and children eight and four years after primary vaccination, respectively,[11,12] and the immunogenicity in children is lower. Besides, following 17D vaccination, the T cell response is invoked, contributing to protection against wild-type YFV[13] and increasing the immune response. Studies have been also showing that even lower doses than standard may produce neutralizing antibodies levels.[14,15] This strategy was already used in early epidemic in the Democratic Republic of Congo, as an option to stretch vaccine supplies,[16] which 98% (95% CI, 96–99) of seroconversion. All these factors may suggest a benefit of a booster in endemic or epidemic circumstances. However, it is important to consider that the method to measure antibody levels had low stringency (PRNT 50 rather than PRNT 80), which may result in detection of unspecific antibody. Besides, there is not correlation between protection and antibody titers.

In light of this information, the recommendation of a single dose of 17D vaccine might be not reasonable. We are suggesting the immediate vaccination to more than 90% of population (with fractional or full doses, respecting the contraindication), followed by vaccination campaign with full dose in the near future, and new studies about a single dose of 17D vaccine and response to fractional doses in different population and epidemiological context. Until then, due to vaccine failures already described, we believe at least two doses are recommended while as long as sufficient vaccines are available.

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