

Assessing the transmission of arboviral diseases using a multiplexed cross-sectional serological survey in French Guiana

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Abstract

Arboviral infections have become a significant public health problem worldwide and estimating their true burden represents a crucial issue but remains a difficult task. In French Guiana, the epidemiology of arboviral diseases has been marked by the occurrence several major dengue fever (DENV) outbreaks over the past few decades, recent emergences of Chikungunya (CHIKV) and Zika virus (ZIKV) and the circulation of Mayaro virus (MAYV). To assess antibody seroprevalence against DENV, CHIKV, ZIKV, MAYV, a random 2-stage household cross-sectional serosurvey was conducted among the general population. We enrolled 2,697 individuals aged 2-75 years from June to October 2017. We performed detection of IgG antibodies using a multiplexed microsphere-based IgG immunoassay. Socio-economic, environmental data and exposure to mosquitoes were collected using a standardized questionnaire. The impact of cross-reactivity between same families of viruses was quantified combining seroneutralization tests and modeling approaches. Overall seroprevalence rates for DENV, CHIKV, ZIKV and MAYV were respectively 69.7% [66.2%-71.0%], 22.9% [20.3%-25.8%], 23.3% [20.9%-25.9%] and 2.9% [2.9%-3.1%]. The spatial distribution of seroprevalence rates for CHIKV, ZIKV antibodies differed from extrapolations obtained from routine surveillance systems and brings valuable information to assess the epidemic risk of future outbreaks.

Biography:

Claude Flamand has completed his PhD in Epidemiology and Biostatistics from Paris-Saclay University. After 10 years working as a field epidemiologist at the French Public Health agency, he joined Pasteur Institute International Network as an

epidemiologist researcher. He is currently the head of epidemiology unit of Institute of Pasteur in French Guiana, and his main research interest is to study epidemics and infectious diseases outbreaks to better understand how pathogens spread in human populations.



Speaker Publications:

1. Impact of Zika virus emergence in French Guiana; A large general population sero-prevalence survey; *J Infect Dis* 2019.
2. Vaccination coverage in the context of emerging yellow fever threat in French Guiana; *PLoS Negl Tropical Disease* 2019; doi:13(8):e000766.
3. Current challenges and implications for dengue, chikungunya and Zika seroprevalence studies worldwide; A scoping review. *PLoS Negl Trop Dis* 2018;12:e0006533.

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