

Characterizing Incident Acute Lassa Virus Infection in Southern Nigeria

Lassa fever (LF) is a viral hemorrhagic disease caused by the Lassa virus (LASV). First described in Nigeria in 1969, LASV is now endemic across West Africa. Roughly 80% of LASV infections present with mild or asymptomatic disease; hence the true burden of LASV infection in endemic regions is poorly understood, leaving a knowledge gap that is critical for epidemic preparedness and outbreak response. Despite its known endemicity in West Africa, there are knowledge gaps in LASV distribution outside of West Africa, the dynamics of disease transmission and the true case fatality ratio. These gaps highlight critical vulnerabilities of concern For Force Health Protection. Since April 2021, the Walter Reed Army Institute of Research (WRAIR) Emerging Infectious Disease Branch (EIDB), in collaboration with the African Center of Excellence for Genomics of Infectious Diseases (ACEGID) has been carrying out a population-based, longitudinal cohort study, designed to determine the incidence and background prevalence, as well as risk factors for and transmission dynamics of acute LASV infection at two Lassa-endemic locations in Southern Nigeria: Owo and Abakaliki. Enrollment is currently in the second of two LASV transmission seasons. Participants are followed weekly during the peak transmission season and tested for LASV by RT-PCR and serology. Detection of symptomatic LASV infection triggers a more intensive blood sampling schedule to characterize the early immune response and viral kinetics of acute LASV infection and their correlation to clinical outcomes. The study includes concurrent zoonotic surveillance of targeted (LASV-affected households) and non-targeted (households without history of LASV infection) rodent and non-rodent reservoirs. 254 participants have been enrolled and 5804 follow-up visits have been completed, with 5 prevalent and 5 incident asymptomatic and no incident symptomatic LASV infections. Samples of 865 trapped rodents (49.5% *Mastomys natalensis*) and 243 non-rodent animals from 222 households are being analyzed for presence of LASV. Of 336 rodent tissue samples (from 112 rodents) so far analysed by PCR, 79 tissues (from 42 rodents, 37.5%) were positive for LASV. Enrollments will continue through the 2022 LASV season to a target of 450 total participant enrollments.

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