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Lassa fever disease risk: a socioecological study of the human-rodent-virus interface

Inhalt

Lassa fever is a potentially fatal haemorrhagic disease caused by the zoonotic virus, Lassa mammarenavirus (LASV). It is endemic to West Africa, where an estimated 900,000 infections and 18,000 deaths occur each year. LASV is transmitted mainly by *Mastomys natalensis*; a rodent reservoir that thrives in human-dominated landscapes across sub-Saharan Africa. Reducing disease risk relies on limiting human exposure to rodents, yet human-rodent interaction dynamics and their drivers are poorly understood. We investigated the socioecological drivers of LASV exposure risk in Sierra Leone, combining concurrent rodent trapping, human mobility tracking, and surveys to understand human-rodent shared space-use and transmission risk. Fieldwork spanned four villages across the dry and wet seasons in 2025. Rodents were trapped in and around each village and tested for LASV RNA and antibodies. We simultaneously recorded the movement patterns of 240 participants and conducted interviews to understand demographic and behavioural drivers of disease. In 2026, we collected blood samples from these participants to test for LASV-specific IgG and IgM antibodies –providing the missing link between shared space-use and actual exposure risk. Serological work is currently underway in Sierra Leone. Here we present preliminary results, with the aim of identifying who is most at risk, when and where exposure occurs within the local landscape, and the socioecological factors driving these patterns.

Keywords

Lassa fever, LASV, zoonotic spillover, rodent reservoir, human-rodent interaction, socioecological drivers, seroprevalence, One Health, West Africa

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