Rainfall variability and Rift Valley fever: the new trend in disease emergence in a low endemic area of Nyandarua

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The emergence of Rift Valley fever (RVF) an infectious disease in the Kenyan highlands that had been domiciled in disease-endemic areas, has an impact on health policy and prevention. In East Africa including Kenya RVF outbreak of 1997/98 and 2006/7 led to livestock mortality, trade disruptions, and losses of $500 Million. The livestock vaccination intervention is expensive and DALYs of 3.4 per 1000 individuals. In recent years, the government and other partners have been working on RVF contingency plans for disease prevention and control. The main concern is the changing dynamics of RVF epidemiology, which is influenced by eco-climatic changes, vector emergencies, and anthropogenic activities. Between 2019 and 2021, the RVF virus in Nyandarua County was probably imported into local livestock populations. There is a close relationship between rainfall and RVF epidemics in endemic areas. The anomaly in rainfall and increase in the breeding of vectors lead to the transmission of the virus to susceptible livestock. Livestock movements to pastures from neighbouring endemic areas due to drought are a driver in introducing RVF in low-endemic areas. Gridded NASA-IMERG rainfall data for the Abstract highest monthly mean of dry, short, and long rainy seasons from January 2015 to December 2021 confirmed the variability. The dry month of January 2020, short rains in November 2019, and long rains in April 2018 were the highest. In conclusion, there was a variation in rainfall in different years and seasons in Nyandarua. The monthly mean rainfall should be used instead of annual rainfall.

Mr James Wanjama Kabugu is a laboratory scientist with over 13 years of experience working in government and collaborating with research institutions. He is currently a PhD candidate (Tropical and Infectious Diseases) at the Department of Medical Microbiology & Immunology, and the Institute of Tropical and Infectious Diseases at the University of Nairobi. The current research aims to understand the transmission dynamics of Rift Valley fever (RVF), an infectious zoonotic disease, and its socioeconomic and public health impact on small-scale livestock farmers in Nyandarua County. This region was once considered a low-risk area for RVF disease.

He has a keen interest in working with disease vectors, and vector-borne and infectious diseases using a One Health approach. He has investigated the association of RVF incidences and RVF vector distribution and abundance linked with rainfall variability in Nyandarua. In addition, he used Oxford Nanopore Technology (ONT) to detect pathogens from livestock blood that are of public and animal health importance. This work was funded by the Kenya Climate Smart Agriculture Project (KCSAP).