



Letter to the Editor

## Multiple Rift Valley Fever outbreaks in Uganda: Should there be global concern?



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Rift Valley fever (RVFV) named after Kenya's Rift valley is a viral infection found in sub-Saharan Africa and the Arabian Peninsula, transmitted via mosquito and sometimes through contact with body fluids, blood, or infected animals [1]. Clinical presentation in humans can range from mild flu like illness to severe like ocular involvement, encephalitis and hemorrhagic fever [2]. Sheep, goats, and cattles are some of the other livestock which can contract RVFV [3].

Even though the virus was identified in the 1930s, there is still lacunae left in understanding its effects and proper treatment for this [4]. The World Health Organization (WHO) have identified the risks of RVFV by defining it as a disease that 'poses the greatest public health risk due to their epidemic potential and/or whether there is no or insufficient countermeasures', as part of the WHO R&D Blueprint [5].

There have been reported several outbreaks of RVFV in Uganda since March 2016. As of 15th October 2022, Uganda has reported 1,69,396 confirmed cases and 3628 deaths. During this pandemic, Uganda has also experienced outbreaks of RVFV, putting further pressures on public health, surveillance and health systems in the country. There was an outbreak between 25 September to 25 December 2021. There occurred another outbreak in 2022, with confirmed cases reported on 30 August 2022 [6].

According to WHO report on 18 August 2022, the Uganda International health regulations – National Focal points (IHR-NFP) notified two confirmed cases of Rift Valley Fever one in 27 July 2022 and another on 2 August 2022, both located in the south western regions of the country [7]. The July 2022 case was located in the Rubanda district, close to the Rwanda border. This index case, a 39-year-old female was brought to Kabale Regional Referral Hospital on 23rd June 2022, with fever, loss of appetite, joint pain and headache.

The August 2022 case was a 27-year-old male patient from the Isingiro district, who presented on 24 July 2022 with fever, vomiting, diarrhea, fatigue, abdominal pain, joint pain, dysphagia, dyspnea,

and unexplained bleeding from the nose. He visited Mbarara regional referral hospital and was admitted due to severe symptoms where he died on 29th July 2022. Samples from both these cases were sent to the Uganda Virus Research Institute, and was tested positive for RVFV with results declared on 2nd August 2022 (Fig. 1).

Although in animals the transmission is mostly through mosquito bites, most human infection results from contact with infected blood, body fluids or tissue, or consumption of undercooked meat or milk of the infected animals. Human-to-human transmission of Rift Valley Virus has not yet been documented. Outbreaks are mostly observed during the rainy season, likely due to an increased number of vector population. The incubation time of the Rift Valley virus varies from 2 to 6 days [6].

The main populations at risk are those living in rural areas, people handling animal tissues during slaughtering or butchering, Veterinarians and other assisting staff who support animal birth and conducting veterinary procedures, along with occupational groups like herders or farmers [8].

Most people with RVFV have either no symptoms or a mild illness with fever, weakness, back pain, and dizziness. Around 8–10 % of people with RVFV develop severe symptoms, including eye disease, hemorrhage (excessive bleeding), and encephalitis (swelling of the brain). Most people recover within one week. The case fatality rate is approximately 1 % [9].

RVFV is considered as a Class 3 pathogen, with diagnostic testing for RVFV is normally carried out in specialized reference laboratories with trained biomedical professionals with high containment level (biosafety level 3 (BSL3)) required for handling suspected RVFV cases. The insufficient laboratory capacity in endemic areas is a significant barrier for early RVFV diagnosis and thereby causing delay during epidemic detection. The WHO recommends the following tests for a conclusive diagnosis of RVFV infection: (1) real-time polymerase chain reaction (RT-PCR) detection of virus RNA in

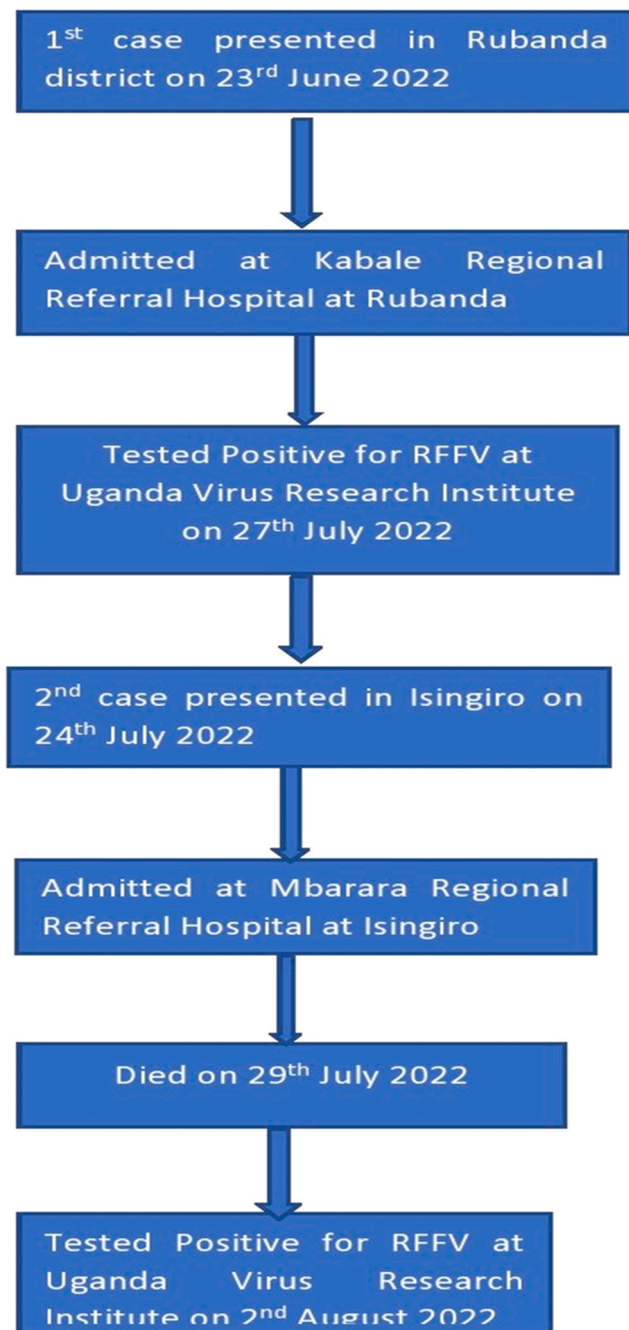


Fig. 1. Timeline of Rift Valley Fever Disease in Uganda.

blood or plasma; (2) detection of anti-RVVF IgM and IgG antibodies; (3) detection of RVVF virus antigen; and/or (4) RVVF isolation in cell lines. The ability to identify antigenic (isolated virus, viral RNA), immunological, and sampling timing in relation to disease development all play a role in choosing the best assay (IgM and IgG). If the date of infection is uncertain, a combination of molecular and serological testing is typically required to confirm RVVF cases [10].

Rift Valley Fever outbreaks will continue in endemic areas like Uganda, and may indeed worsen due to climate change, deforestation and temperatures change and ability of the mosquitoes to adapt

to new habitats. The WHO reported a RVVF death in, Mauritania, in West Africa on 29 Aug 2022– given the prevalence of vectors capable of transmitting the virus, Rift Valley Fever clearly has the potential to be a public health concern in multiple countries [11]. Being a highly pathogenic virus with a potential threat use this as a bioterrorism weapon and the lack of proper treatment options and the epidemic potential of this virus, it is vital to invest greater research funding needed for development of easy, rapid and early diagnosis along with vaccine and therapeutic development. There is also a need of good epidemiological research for better understanding of the risk factors around the disease. and social science studies that consider socio-economic consequences and aspects such as stigma [12].

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