


The Outbreak of the Ebola Virus: Sudan Strain in Uganda and its Clinical Management

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SUDV: Sudan virus
WHO: World Health Organization

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Dear Editor,

Ebola Virus is a severe and usually fatal disease. Ebola is highly contagious and kills quickly, but it may be averted with early medical care. Here, we report the recent outbreak of a new Ebola strain, confirmed by Uganda health officials.¹ This epidemic of Ebola is caused by the Sudan virus (SUDV) and caught the world's attention when a patient from Madudu sub-county, Mubende district, central Uganda tested positive. From the districts of Mubende, Kyegegwa, and Kassanda, 23 deaths have been recorded, with 18 confirmed and 18 suspected cases. Uganda has not seen an epidemic of Ebola illness due to the SUDV since 2012.² High body temperature, seizures, vomiting blood, diarrhea with blood clots, lack of appetite, chest discomfort, dry cough, and eye bleeding are all symptoms of the SUDV,³ as demonstrated in Figure 1.

Ebola may emerge to be another candidate to cause a global pandemic.⁴ However, measures are being taken to avoid it. The fast life of humans has given the ability to these infectious agents to travel with them around the globe, sometimes undetected.⁵ With Uganda's report of a rare strain, it is thought to spread to neighboring cities, towns, and countries. This might not only be possible through the infected people, but also through the animal population in the related areas.¹ The frontline nurses, doctors, and staff might also be at high risk, and their families can become a part of this possible outbreak if not properly managed.⁴ Earlier outbreaks have caused a lot of damage to human lives and their livelihood. People who get infected are compromised as they are on verge of being unemployed and fired from the job for reasons beyond their control, like quarantine time.⁶ This affects the supply chains of the country as they face an imbalance of workers' demand, which in return can affect the host country's economy, along with its neighboring countries' trades.

The outbreak of the Ebola Zaire strain has been documented in Liberia, Guinea, and Sierra Leone, and approximately 28,610 cases and almost 11,308 deaths were recorded in the last five years.^{1,7,8} Other affected countries include Italy, Nigeria, Spain, the United Kingdom, and the United States.¹ An abridged statistical analysis of the cases related to the Ebola outbreaks in the last five years and the current rare Ebola strain is provided in Figure 1. The current Ebola Sudan outbreak began in a small town in Mubende district around the beginning of September.⁹ The World Health Organization (WHO; Geneva, Switzerland) earlier believed the Ebola Sudan strain is less transmissible and has a lower mortality rate than Ebola Zaire, which killed almost 2,300 people in the 2018–2020 epidemic in Congo;¹ however, the WHO and other health care organizations have recorded an alarming 100% fatality rate in the recent outbreak,^{1,7} making it an imminent health care threat. The first victim was a 24-year-old male. In Kampala, 16 people had Ebola, and 18 more presumably did as well. On September 20, Uganda declared an Ebola epidemic after a Sudan strain case was identified in the Mubende region.¹⁰ As of September 25, 36 Ebola case patients (18 confirmed, 18 suspected) and 23 cumulative deaths in Mubende and Kyegegwa (four confirmed, 19 probable); 399 contact cases have been detected, with 104 being followed up.¹¹

Case management, monitoring, infection prevention, control measures in health care and community settings, and safe and dignified burials are required for effective outbreak control. Community involvement is required for epidemic containment. Human transmission must be reduced, especially if people are aware of the risk factors for Ebola and take precautions, and early treatment. Improving surveillance and response can help to prevent

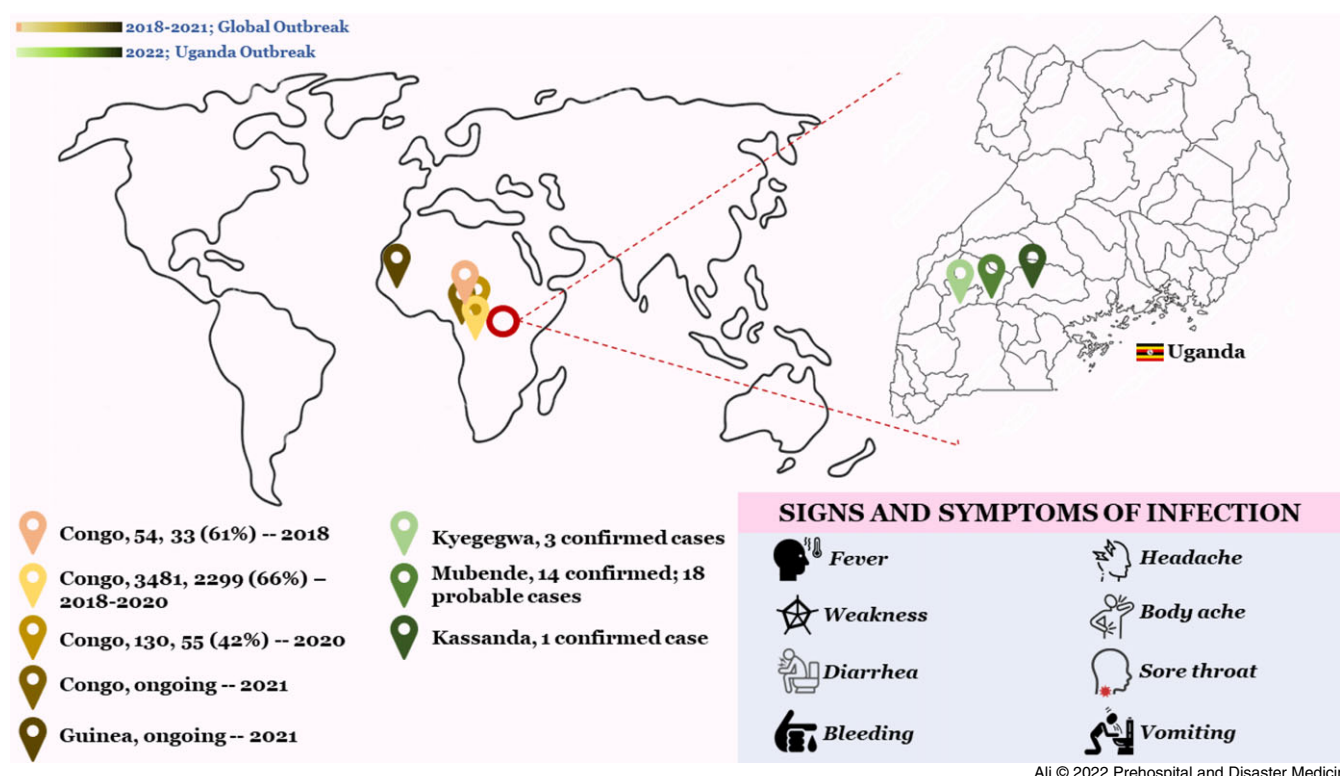


Figure 1. Symptoms of the Ebola Virus Infection and Statistical Coverage of Ebola Outbreaks in the Last Five Years.

Note: The shades of yellow indicate the outbreaks of the Zaire strain, whereas the shades of green indicate the outbreaks of the Sudan strain limited to Uganda.

exponential spread. According to existing information, the ERVEBO vaccine utilized in recent Ebola outbreak responses does not protect against the SUDV.⁷ Moreover, according to our research, the new strain is not available on databases like NCBI (National Center for Biotechnology Information, National Institutes of Health; Bethesda, Maryland USA) or UniProt KB (UniProt Consortium), necessitating a thorough molecular examination of the patient samples. The following recommendations can help us get ahead of this outbreak and prepare for the potential threat of the Ebola virus Sudan strain:

1. The infected regions must be alerted and informed about the dos and don'ts of the Ebola virus spread and transmission;
2. The patients must be quarantined to contain the spread and traffic flow to and from the affected cities must be minimized;
3. Blood samples of the patients must be subjected to thorough molecular analyses including ELISA, sequencing, and computational analysis to identify the strain's genetic elements and compare it with the previous strains; and

4. The newest strain's genetic sequence must be utilized to develop immunoinformatic-based protective immunotherapies.

Uganda is well-prepared to deal with Ebola and SUDV epidemics, and prompt measures are being exercised, thanks to the long-standing history of the country with viral outbreaks. It is, however, the first epidemic of Ebola illness in Uganda driven by the SUDV after 2012. The possible public health effect of SUDV illness is substantial, yet there are currently no approved vaccines or treatments for preventing or treating it. There is a significant danger of multiple transmission chains due to fatalities in the neighborhood and the treatment of patients in state hospitals, clinics, and other public health services with inadequate protection and disease prevention and control methods. The extent of the epidemic and the likelihood of it transmitting to other areas are being investigated. Moreover, it is now impossible to rule out the possibility of instances being transferred to neighboring nations. Considering these facts, the Ebola virus's Sudan strain needs the urgent attention of all stakeholders, and the recommendations discussed above can prove to be ideal for containing its potential proliferation.

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