



Letter to the Editor

Addressing the recurrent Nipah Virus outbreaks: A call for vigilance, collaboration, and preparedness

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Dear Editor,

The Nipah Virus (NiV), a zoonotic pathogen transmitted by fruit bats, has garnered global attention due to its devastating impact [1]. Originating from fruit bats of the genus *Pteropus*, this virus has unleashed its fourth outbreak in the Kozhikode region of Kerala, India, since 2018, resulting in six infections and two fatalities [2]. Human NiV infections range from asymptomatic cases to fatal encephalitis, often leading to a rapid onset of coma [1]. With no available vaccines, it is imperative to prioritize molecular-level research and containment strategies, including rigorous cleaning of pig farms and public awareness campaigns [1].

The recurrent NiV outbreaks in Kerala unveil a worrisome pattern, demanding prompt action to unearth and address the root causes for effective prevention. Kerala has witnessed multiple NiV outbreaks, primarily in Kozhikode, since May 2018, with one incident in Ernakulam in 2019 [3]. India's first NiV outbreak occurred in 2001, followed by another in 2007 in West Bengal [3]. The NiV outbreak has coincided with the ongoing COVID-19 pandemic, straining Kerala's healthcare system and impacting mental well-being. The complex transmission dynamics stemming from fruit bats of the *Pteropus* genus extend to human-to-human transmission. The close interaction between humans and animals in densely populated areas exacerbates the risk. Bats' consumption of partially eaten fruits offers a potential avenue for the virus, further amplified by bats' migratory behaviour [4].

The recent NiV outbreak in Kerala since 2018 has triggered a coordinated response from the state, involving critical measures such as routine nose swabs for early diagnosis following the initial fatalities [5]. Kerala's health authorities have demonstrated exceptional prowess in contact tracing, utilising CCTV footage to connect the first two fatalities and launching extensive efforts. Collaboration between Kerala's health authorities and neighbouring states like Karnataka and Tamil Nadu is intensifying, enhancing vigilance for potential cases and averting cross-border transmission. Concurrently, the World Health Organization (WHO) has supported Kerala's efforts, offering guidance, expertise, and resources to effectively manage the outbreak. They provide vital information on the virus, treatment protocols, and best practices for

containment.

In response to the recurrent NiV outbreaks, it is paramount that proactive measures be taken to mitigate future risks. Enhanced Surveillance is of utmost importance, entailing the implementation of comprehensive surveillance systems to monitor the movement of fruit bats and detect potential outbreaks at an early stage. This surveillance enables timely responses and containment measures, reducing the impact of the virus on both human and animal populations.

Public Awareness plays a pivotal role and necessitates launching awareness campaigns to educate communities about the risks of consuming partially eaten fruits. Emphasising the importance of reporting sick animals is also crucial. Public awareness is indispensable in preventing the transmission of the virus from animals to humans and in promoting early intervention when cases do arise.

Interstate Collaboration is vital, requiring the strengthening of partnerships between Kerala and neighbouring states to establish a unified response to outbreaks and prevent cross-border transmission. Diseases like the NiV do not respect geographical boundaries, making regional cooperation essential for effective control and containment.

Research and Vaccine Development should be prioritised, with resources allocated for further research on NiV genetics and investment in developing vaccines and antiviral medications. Research provides insights into the virus's behaviour, transmission dynamics, and potential treatments, while vaccine development offers long-term protection against future outbreaks.

Capacity Building is necessary, involving continuous training for healthcare professionals to ensure they can effectively and safely manage NiV cases. This training encompasses clinical aspects, outbreak response coordination, infection control measures, and adherence to public health protocols.

The One Health Approach is fundamental, emphasising the interconnectedness of human, animal, and environmental health. This holistic approach recognises that the health of humans, animals, and ecosystems are intertwined and that solutions must consider these interconnected factors to prevent and manage outbreaks effectively.

The resurgence of NiV outbreaks in Kerala is an urgent concern that demands collective attention and proactive measures. The fight against

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the NiV underscores the critical need for ongoing research, preparedness, and global collaboration in the face of infectious diseases with pandemic potential.

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Declaration of competing interest

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Gbolahan Olatunji

Department of Medicine and Surgery, University of Ilorin, Kwara State, Nigeria

Emmanuel Kokori

Department of Medicine and Surgery, University of Ilorin, Kwara State, Nigeria

Moradeyo Akanmu Abdulrahmon

Department of Medicine, Ladoke Akintola University of Technology, Nigeria

Nicholas Aderinto*

Department of Medicine, Ladoke Akintola University of Technology, Nigeria

* Corresponding author. Department of Medicine, Ladoke Akintola University of Technology, PMB 5000, Nigeria.

E-mail address: nicholasoluwaseyi6@gmail.com (N. Aderinto).