

# **Nipah Virus: An Emerging Pandemic Threat with Potential Implications for Iran and the Middle East**

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Dear Editor,

The recent detection and re-emergence of Nipah virus (NiV) cases in Asia have once again drawn global attention to one of the most lethal zoonotic viruses known to date. Nipah virus is currently classified by the World Health Organization (WHO) as a priority pathogen with epidemic and pandemic potential due to its high case fatality rate, documented human-to-human transmission, broad animal reservoir, and lack of licensed vaccines or specific antiviral therapies (1,2).

Nipah virus is a zoonotic, negative-sense RNA virus belonging to the genus *Henipavirus* within the family *Paramyxoviridae*. Since its first recognized outbreak in Malaysia in 1998, recurrent outbreaks have been reported primarily in Bangladesh and India, with case fatality rates ranging from 40% to over 75%. These mortality rates place Nipah virus among the deadliest emerging viral pathogens identified to date (4).

Unlike many zoonotic viruses, Nipah virus has demonstrated a clear capacity for sustained human-to-human transmission, particularly in household and healthcare settings (5). Nosocomial transmission has been repeatedly documented during outbreaks in South Asia, raising serious concerns regarding the virus's adaptability and its potential to cause larger epidemics or even a future pandemic should viral transmissibility increase further (6).

From a regional and national perspective, the potential implications of Nipah virus for Iran warrant serious consideration. Iran occupies a strategic geographical position connecting South Asia, Central Asia, and the Middle East, with extensive travel, trade, and population movement across these regions. Moreover, Iran lies along ecological and migratory corridors of bat species, including fruit bats (*Pteropus* spp.), which are recognized as the natural reservoirs of Nipah virus (7). Although no autochthonous human cases have been reported in Iran to date, ecological suitability, climate change, land-use modifications, and increasing human–animal interactions may facilitate future zoonotic spillover events.

In addition, Iran's healthcare system while experienced in managing infectious disease outbreaks could face substantial challenges in the event of Nipah virus introduction due to the absence of specific therapeutics, the requirement for high-level infection prevention and control measures, and the need for rapid molecular diagnostics, which are not yet widely available across all regions.

At present, clinical management of Nipah virus infection is limited to supportive care and strict infection control practices. Although several promising vaccine candidates, including recombinant viral vector and mRNA-based platforms, are under development, none have yet been licensed for routine clinical use (8). This therapeutic and preventive gap significantly amplifies the risk of severe outcomes and healthcare system overload in low-preparedness settings.

Given these realities, Iran and neighboring countries should proactively integrate Nipah virus into their national emerging infectious disease preparedness frameworks. Key priorities include strengthening integrated human–animal surveillance, expanding laboratory diagnostic capacity, enhancing healthcare worker training, improving cross-border data sharing, and participating in international vaccine and therapeutic research initiatives.

In conclusion, the re-emergence of Nipah virus in Asia should be regarded as a critical early warning signal rather than an isolated regional event. For Iran and the wider global community, early preparedness, surveillance, and coordinated international action are essential to prevent Nipah virus from becoming the next devastating pandemic pathogen.

**Conflicts of Interest:** None

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