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Nipah Virus: Could This Deadly Spillover Trigger the Next Pandemic?

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Abstract

In January 2026 the re-emergence of Nipah virus (NiV) in the Indian state of West Bengal, has revived the global concern due to its high fatality rate and zoonotic potential. The virus which is predominantly harboured by the fruit bats is transmitted to humans through direct contact with infected animals, contaminated foods, or human to human interaction. Although limited human to human transmission has been reported in case of NiV, its inherent capacity for mutation and cross-species infection gives rise to probable evolution into a pandemic-causing virus. The 2026 outbreak revealed successful containment of the virus through modes such as rapid surveillance, contact tracing and public health interventions. This article highlights the transmission pathways, epidemiology and pandemic potential of Nipah virus, while also lays down the importance of proactive surveillance, awareness among the community, and biosecurity measures to mitigate the future outbreaks.

Introduction

The start of 2026 has once again brought the Nipah virus into global headlines, stirring memories and anxieties reminiscent of the early days of the COVID-19 pandemic. While Nipah is undeniably far more lethal than COVID-19, its biological behaviour and patterns of spread tell a very different story. Unlike a highly transmissible virus that can sweep across continents, the epidemiology of Nipah suggests a different pattern.

Nipah virus is an enveloped negative sense single stranded RNA virus belonging to family Paramyxoviridae **(1)**. It is an emerging zoonotic disease bats which is transmitted from animals to humans, can also be transmitted through contaminated food or directly between people. It was first identified in 1998 during an outbreak among pig farmers in Malaysia. In 2001 it was reported in India and Bangladesh. In India and Bangladesh, the outbreaks are reported periodically ever since including the latest one in 2026. In 2018, at least 17 people died from Nipah virus in the Indian state of Kerala, and two more died in 2023 **(2)**.

The 2026 West Bengal Outbreak

As per reports from WHO the National IHR Focal Point for India notified WHO of two laboratory-confirmed cases of Nipah virus infection in West Bengal State on 26 January 2026. Both were the healthcare workers working at the same private hospital in West Bengal, one whom died following severe complications **(3)**. Almost 200 contacts linked to the confirmed cases have been identified, traced, monitored and tested negative for the disease. Enhanced surveillance, laboratory testing, and field investigations ensured the timely containment of disease as per the report of Ministry of Health and Family Welfare on 27 January 2026 **(4)**.

Epidemiology of Virus

Fruit bats from the Pteropodidae family are known as the natural host of Nipah virus and are present in different parts of Asia and Australia. Infection with this virus does not cause disease in fruit bats.

"**The Spillover infection"-** Transmission to humans occurs through direct contact from infected animals like bats, pigs or horses and by consuming fruits. In Bangladesh cases of Nipah have been reported due to consumption of fruit products such as raw date palm juice, contaminated by infected fruit bats **(1)**.

Animals such as pigs can be severely infected by the virus.

Human spread: Direct transmission between humans occurs through close contact with an infected person's saliva, urine or through respiratory droplets. This makes healthcare workers the highest risk group as reported in 2026 West Bengal outbreak.

Pandemic potential of Nipah Virus and Public Health implications

Since 2017, NiV has been included in World Health Organisation list of priority pathogen. The Centers for Disease Contol and Prevention (CDC) and the National Institute of Allergy and Infectious Diseases (NIAID) consider NiV as C priority pathogen (potential biological weapon for bioterrorism) (World Health Organization National Guideline for Management, Prevention and Control of Nipah Virus Infection including Encephalitis. 2011 **(5)**.

The greatest concern for global health is the possibility that Nipah virus (NiV) may evolve into a form that spreads more easily between people. Evidence of transmission from infected patients to caregivers has already been observed, which suggests that the virus may gradually adapt to more efficient human-to-human spread. NiV is an RNA virus, and such viruses tend to mutate frequently. Because it can infect many different animal species and has already shown the ability to spread between animals and humans, as well as between humans

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themselves, these mutations may lead to the development of new variants that transmit more effectively.

Zoonotic diseases can be divided into four stages, which include: **(1)**

- I exclusive to animals
- II primary human infections only
- III limited interhuman transmission
- IV sustained interhuman transmission

The shift from stage III to IV occurs when the basic reproduction number R_0 becomes greater than 1 ($R_0>1$). At this point the infected person can transmit the disease to more than one individual on an average, and this is how the disease maintains continuous transmission within the human population. Currently Nipah virus is being placed at the Stage III i.e limited human to human transmission can occur. The virus has not become fully adapted for sustained spread among people. But the factors such as global travel networks, high case fatality rate of Nipah virus and dense population in South Asia can greatly increase the impact if the virus evolves to achieve an R_0 greater than 1**.** In such case the disease can rapidly trigger a global pandemic.

How can the spread be controlled?

Active surveillance

Regular testing of bat colonies and monitoring of 'spillover events' is done in high-risk areas such as Kerala and Bangladesh. Thus, an early public warning system is activated by identifying the virus in bats before it infects the humans. Deploying of '**Rapid response teams'** as seen in January 2026 outbreak by the Indian health ministry to trace every single contact of the infected persons also helped in curtailing the outbreak to a great extent.

Enhancing farm biosecurity

Since pigs can act as the amplifiers of the disease strict biosecurity measures should be applied at the farms to prevent the access of fruit bats **(6)**.

Community education

For instance, In 2009 awareness messages were spread in rural areas of Bangladesh to discourage people from drinking raw date palm sap. The campaign called '**Only Safe Sap'**) proved to be effective as it helped the people to better understand the disease and how the virus can spread **(1)**.

Also, maintenance of personal hygiene, washing of hands with soap and water in case of contact with the infected patient helps in prevention of transmission of virus from person to person.

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Vaccination- All human vaccine candidates are in phase of development but none have been approved for human use till now.

In endemic regions:

Consumption of raw date palm sap should be avoided. Once the sap is boiled it kills the virus instantly.

Hand washing with soap and water proves to be highly effective as it destroys the virus's outer envelope.

Conclusion

Nipah virus continues to pose as notable public health threat due to its high fatality rate and zoonotic capability in spite of its present limitation in sustained human-to-human transmission. The West Bengal outbreak of 2026 highlights the efficacy of timely intervention strategies such as active surveillance, community awareness campaigns, and rapid response teams in prevention of epidemic of NiV virus. However, the risk of evolution of this virus into a more transmissible form cannot be neglected. Strengthening of healthcare services, improvement of farm biosecurity, accelerating vaccine development, promoting behavioural changes in NiV endemic regions are pivotal steps to decrease the risk of future outbreaks. Continuous vigilance and a One Health approach are essential to prevent Nipah virus from escalating into a global pandemic.

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