

Nipah Virus (NiV) Infection

Nipah virus (NiV) infection is an emerging zoonosis that causes severe disease in both animals and humans and is endemic in South-East Asia Region. NiV was initially isolated and identified in 1999 in Malaysia and Singapore during an outbreak of encephalitis and respiratory illness among pig farmers and people with close contact with pigs. In May 2018, confirmed cases of Nipah virus (NiV) infection including fatalities have been reported in the southern state of Kerala, India. As of 25 May 2018, a total of 36 cases including 11 confirmed deaths have been reported.

Clinical Picture: Infection with Nipah virus is associated with encephalitis. After exposure and an incubation period of 5 to 14 days, illness presents with 3-14 days of fever and headache, muscle pain, nausea and vomiting, followed by drowsiness, disorientation and mental confusion. These signs and symptoms can progress to coma within 24-48 hours. Some patients have a respiratory illness/ Influenza like illness (ILI). Long-term sequel following Nipah virus infection have been noted, including persistent convulsions and personality changes. It has 74% mortality rate.

Infectious Agent: Nipah virus belongs to Henipavirus genus of Paramyxoviridae family.

Host/ Reservoir: Fruit bats of genus Pteropus, family Pteropodidae (also known as flying-foxes) are the natural hosts of the virus.

Mode of Transmission: Nipah virus can be transmitted to humans from animals (bats, pigs) consumption of fruits contaminated with droppings/ secretions and can also be transmitted directly from human to human.

Incubation Period: 5-14 days

Seasonality: Outbreaks in South-East Asia occurred during winter and spring (December-May).

Case Definition:

1. **Suspected Case:** Any person with the following criteria:
 - With respiratory features (cough, breathing difficulty) with acute encephalitis symptoms as acute onset of fever **AND** altered mental status **OR** seizure **OR** any other neurological deficit
 - Epidemiological linkage like drinking raw date, palm sap **OR** travel to Nipah endemic areas
2. **Probable Case:** Any suspected case with epidemiological link or positive serological testing
3. **Confirmed case:** Any suspected/ probable case with laboratory confirmation of the disease

Lab Confirmation: Procedures for the laboratory diagnosis of NiV include serology, histopathology, PCR and virus isolation. Specimens for virus isolation should be collected

every second day of infection. For PCR, throat and nasal swabs, cerebrospinal fluid, urine and blood and for serology at least 5 ml of serum is required for serological testing. Tissues were either fixed in 10% neutral buffered formalin for 48 hrs prior to histological processing or submerged in RNA or viral transport medium following full biosafety protocol.

Treatment: No vaccination for human use is available. Supportive care is recommended as no specific antiviral are available. Treatment is mostly focused on managing fever and the neurological symptoms. Severely ill individuals need to be hospitalized and may require use of ventilator. The clinical usefulness of ribavirin remains uncertain.

Risk Assessment in Pakistan: The overall risk of disease occurrence in Pakistan is low. Till date, there is no report of documented animal or human cases of NiV infection in Pakistan. However, there are several factors which could allow NiV emergence in Pakistan like evidences of the presence of *Pteropus giganteus* species of bats and having long border with India where NiV outbreak has been documented.

Preventive Measures:

- Eat fruits only after proper washing and improve public awareness.
- Do not eat partly consumed fruits which may be contaminated with secretions from fruit bats etc.
- Avoid exposure to sick pigs and bats in endemic areas and

Advice for Health Professionals:

- Healthcare professionals should be aware of the signs and symptoms of NiV and obtain a travel history when assessing patients.
- Health professionals caring for patients with suspected or confirmed NiV infection, or handling specimens from them, should implement standard infection control precautions at all times.
- As human-to-human transmission, in particular hospital (nosocomial) transmission has been reported; contact and droplet precautions should be used in addition to standard precautions , ←
- Suspected NiV case samples with relevant history should be referred to PHLD of National Institute of Health with prior intimation.
- Inter-sectoral cooperation among wildlife-animal-human departments in preparedness response to any possible emergence of NiV outbreak in Pakistan based on “one health” approach is recommended.

WHAT IS NIPAH VIRUS?

➤ Nipah virus (NiV) infection is a newly-emerging zoonosis (a disease which can be transmitted to humans from animals)

➤ NiV is a member of the Paramyxoviridae family, genus Henipavirus

HOW IS IT TRANSMITTED

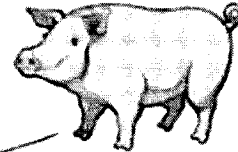
■ A newly emerging zoonosis that causes severe disease in both animals and humans



Through contact with other NiV-infected people



By consuming fruits eaten by infected bats and birds



Transmission of NiV to humans may occur after direct contact with infected bats and pigs

Natural host: Fruit bats

SIGNS & SYMPTOMS

➤ NiV infection in humans has a range of clinical presentations, from asymptomatic infection to acute respiratory syndrome and fatal encephalitis (inflammation of the brain)

➤ After exposure and an incubation period of 5 to 14 days, illness presents with 3-14 days of fever and headache, followed by drowsiness, disorientation and mental confusion

➤ These signs and symptoms can progress to coma within 24 to 48 hours

TREATMENT

➤ There is no vaccine for either humans or animals

➤ The primary treatment for human cases is intensive supportive care

PREVENTION

➤ Infection can be prevented by avoiding exposure to sick pigs and bats and by not eating fruits bitten by bats

➤ Avoid contact with infected persons

ORIGIN

➤ NiV was first identified in 1999 during an outbreak among pig farmers in Malaysia and Singapore

➤ It gets its name from Sungai Nipah, a Malaysian village, where pig farmers became ill with encephalitis

➤ In subsequent outbreaks, there were no intermediate hosts. In Bangladesh in 2004, humans got infected after consuming date palm sap that had been contaminated by infected fruit bats

(Source: WHO & Centers for Disease Control and Prevention, US)