

## **Nipah virus infection and encephalitis**

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### **What is Nipah virus infection?**

Nipah virus infection is a zoonotic disease (a disease that jumps from animals to humans) caused by the Nipah virus. Fruit bats are the natural hosts of the Nipah virus. The virus spreads from bats to pigs and then to humans through close contact with infected pigs or their contaminated tissues. Human-to-human transmission is also possible.

In humans, transmission occurs via consumption of food contaminated with the virus and via contact with infected animals or human body fluids (blood, urine, saliva). The disease was first reported in 1998 in Malaysia with human infections resulting from direct contact with sick pigs or consumption of meat contaminated by the virus. Outbreaks also occurred in Bangladesh, Philippines, Singapore, and India where transmission resulted from consumption of fruits or fruit products (such as raw date palm juice) contaminated with urine or saliva from infected fruit bats. Human to human transmission was seen among families/carers of those affected in hospital settings.

### **Symptoms of Nipah virus encephalitis**

Symptoms of infection range from mild to severe and include fever, difficulty breathing, cough, headache, pneumonia, and vomiting. However, Nipah virus is also neuroinvasive and can cause a devastating, contagious encephalitis outbreak, characterised by severe brain inflammation and dysfunction. Encephalitis due to Nipah virus infection manifests as alteration of the level of consciousness, neuropsychiatric symptoms, seizures or coma. In some cases, encephalitis can appear several months to years (late onset) after recovering from initial infection. It has a high mortality rate (between 40–75% or higher).

### **Diagnosis of Nipah virus encephalitis**

Diagnosis can be made during the acute illness by identification of the virus in urine or blood, by nasal and throat swabs or cerebrospinal fluid (CSF), or later in the illness/during recovery by identification of specific antibodies. The diagnosis can be challenging, however, it needs to be considered in patients returning from endemic regions.

### **Treatment**

There isn't a specific antiviral or vaccine against this virus. Treatment is limited to supportive care through rest, hydration, and treatment of specific symptoms as they occur. Medications include acetaminophen and/or ibuprofen

to relieve pain and fevers; dimenhydrinate and/or ondansetron to control vomiting; and dexamethasone or similar inhalers to improve respiratory symptoms. Anti-seizure medications, such as benzodiazepines, may be used to alleviate seizures associated with acute encephalitis and maintain control of neurological symptoms.

### **Outcomes of Nipah virus encephalitis**

Those who survive can suffer a brain injury and can be left with long-term difficulties such as changes in behaviour, eye movement problems, neck muscle spasms, weakness, facial paralysis, depression, memory problems, and fatigue.

### **Prevention**

Prevention measures consist of avoiding exposure to sick pigs and bats in areas where the virus is present, and not drinking raw date palm sap which can be contaminated by an infected bat. During outbreaks, infection prevention and control measures, and personal protective equipment are required. The practice of good hand hygiene cannot be overstated: frequent handwashing with soap and water can help prevent transmission via contact with contaminated surfaces. Finally, it is important to disinfect equipment and surfaces, particularly medical equipment used on Nipah patients.

Due to the lack of vaccine, specific treatment and the severity of the illness, Nipah virus can have devastating consequences for both the individual and public health as it can have an endemic/pandemic potential. Prevention and awareness measures among population and health care professionals are crucial to avoid outbreaks.

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