

NIPAH VIRUS DISEASE (NiV Disease) (Interim Guidelines)

Human Nipah virus (NiV) infection is an emerging zoonotic disease which was first recognized in a large outbreak of 276 reported cases in Malaysia and Singapore from September 1998 to May 1999.

In India, during 2001 and 2007 two outbreaks in human were reported from West Bengal, neighboring Bangladesh. Large fruit bats of *Pteropus* genus are the natural reservoir of NiV. There is circumstantial evidence of human-to-human transmission in India in 2001. During the outbreak in Siliguri, 33 health workers and hospital visitors became ill after exposure to patients hospitalized with Nipah virus illness, suggesting nosocomial infection. Nipah cases tend to occur in a cluster or as an outbreak.

Epidemiology

Agent: NiV is a highly pathogenic paramyxovirus

Natural Reservoir: Large fruit bats of *Pteropus* genus are the natural reservoir of NiV. Presumably, pig may become infected after consumption of partially bat eaten fruits that dropped in pigsty.

Seasonality was strongly implicated in NiV outbreaks in Bangladesh and India. All of the outbreaks occurred during the months of winter to spring (December-May).

Incubation period: varies from 6-21 days.

Mode of Transmission: Two routes of transmission of Nipah virus have been identified from its natural reservoir to human: drinking of raw date palm sap contaminated with NiV and close physical contact with Nipah infected patients. The person-to person transmission may occur from close physical contact, especially by contact with body fluids.

Diagnosis:

Laboratory diagnosis of a patient with a clinical history of NiV can be made during the acute and convalescent phases of the disease by using a combination of tests. ***Nipah virus is classified internationally as a biosecurity level (BSL) 4 agent. In India, testing facility is available at NIV, Pune.***

Sample Collection and Transport Guidelines:

Nipah virus being a BSL-4 agent, universal, standard droplet and bio-containment precautions should be followed during contact with excretions, secretions and body fluids of suspected patient. Adequate biosafety precautions should be adopted during collection/transport/ storage/ processing of suspected sample.

Sample collection: The samples should be collected as early as possible (preferably within 4 days) with all biosafety precautions and accompanied with detailed history of patients on the performa which can be obtained from the testing laboratory (Presently National Institute of Virology Pune in public sector is the testing laboratory which is diagnosing Nipah virus infection based on molecular detection of viral RNA and antibody detection by ELISA).

During sample collection wear complete disposable Personal Protective Equipments (N 95 mask, double surgical gloves, gowns, goggles etc). Wash hands with soap and water atleast for 30 seconds and then clean hand using 1-2 ml alcohol based hand sanitizer before and after collection of samples

The samples may be as follows

- Throat swab in viral transport medium
- Urine 10 ml in universal sterile container
- Blood in plain vial (atleast 5ml)
- CSF (atleast 1 ml) in sterile container

Transportation and Storage of samples: Samples should be safely packed in triple container packing and should be transported under cold chain (2-6°C) to the testing laboratory with prior intimation. Before dispatching the sample disinfect the outer surface of container using 1:100 dilution of bleach or 5% Lysol solution.

Sample containing vials should be kept in good quality plastic bags tied with rubber bands so that inside material if leaks should not come out of bag. The plastic bag should be kept in another container which should be sealed with adhesive tape. This carrier should be placed in another plastic bag sealed with rubber bands and placed in thermocol/vaccine carrier containing ice. The case sheets with complete information should be placed in plastic bag and should be pasted outside the container.

Samples should be transported at 2-6°C if they arrive at the laboratory with 48 hours; if shipping time is expected more than 48 hours, the samples should be sent using dry ice. Samples should not be held at -20°C for long periods. The sample must be stored at – 70°C if storage is required for longer period.

For further reading: www.ncdc.gov.in/WriteReadData/1892s/File572.pdf(Biosafety manual)

Clinical features

Fever, Altered mental status, severe weakness, Headache, Respiratory distress, Cough, Vomiting, Muscle pain, Convulsion, Diarrhea

In infected people, Nipah virus causes severe illness characterized by inflammation of the brain (encephalitis) or respiratory diseases. In general, the case–fatality rate is estimated at 40–75%; however, this rate can vary by outbreak and can be upto100%.

Surveillance

A systematic surveillance system is a necessary method to identify clusters of encephalitis cases resulting early detection of Nipah outbreaks.

Objectives of surveillance

- Identify clusters of acute encephalitis cases
- Investigate clusters of cases for quick detection of Nipah outbreak

Case Definitions

Suspect Nipah Case

Person from a community affected by aNipahoutbreak who has:

- Fever with new onset of altered mental status or seizure and/or
- Fever with headache and/or
- Fever with Cough or shortness of breath

Probable Nipah Case

Suspect case-patient/s who resided in the samevillage where confirmed case-patient/s were living during the outbreak period and who died before complete diagnostic specimens could be collected.

OR

Suspect case-patients who came in direct contact with confirmed case-patients in a hospital setting during the outbreak period and who died before complete diagnostic specimens could be collected.

Confirmed NipahCase

Suspected case who has laboratory confirmation of Nipah virus infection either by:

- Nipah virus RNA identified by PCR from respiratory secretions, urine, or cerebrospinal fluid.
- Isolation of Nipah virus from respiratory secretions, urine or cerebrospinal fluid.

Definition of a Contact:

A Close contact is defined as a patient or a person who came in contact with a Nipah case (confirmed or probable cases) in at least one of the following ways.

- has slept in the same household as a case
- has had direct physical contact with the case (alive or dead) during the illness
- has had direct physical contact with the (deceased) case at a funeral or during burial preparation rituals
- has touched the blood or body fluids (saliva, urine, sputum etc.) of a case during their illness
- has touched the clothes or linens of a case

These contacts need to be followed up for appearance of symptoms of NiV for the longest incubation period (21 days).

Information on NiV disease to be shared by State Surveillance Unit (SSU) with Central Surveillance Unit (CSU) on a daily basis at dirnicd@nic.in; idsnp-npo@nic.in; and ncdcshoc@gmail.com as below:

1. Cases and Deaths – on Annexure 1
2. List of contacts – Annexure 2
3. Contact follow up – Annexure 3
4. Summary sheet for cases – Annexure 4
5. Summary sheet for contacts – Annexure 5

Treatment: Currently there is no known treatment or vaccine available for either people or animals. However Ribavirin, an antiviral may have a role in reducing mortality among patients with encephalitis caused by Nipah virus disease. Intensive supportive care with treatment of symptoms is the main approach to managing the infection in people.

Annexure 1:

Line list for collection of data with respect to NiV Disease Cases:

S.No	Name	age in completed years	sex	occupation	Name of District	Date of onset of symptoms (DD/MM/YY)	Symptoms at onset					History of travel in 21 days prior to onset of symptoms	History of contact with confirmed or probable case (Y/N)	Date of admission (DD/MM/YY)	Name of Hospital where admitted	Date of sample collection	Result	Whether case was suspect or probable or	Outcome Ill/recovered/Death (in case of death)	Date of Outcome	
							Fever	Altered mental status	Seizure	Headache	Cough										Shortness of Breath

To be shared by DSU to SSU for compilation.State to share the compiled line list with CSU on a daily basis at dirnicd@nic.in; idsp-npo@nic.in; and ncdcshoc@gmail.com

Annexure 2:

Contact Listing Form:Details of the contacts for a confirmed or probable case; Separate sheets to be used for contacts of each case

Contact Listing Form: Details of the contacts for a confirmed or probable case; Separate sheets to be used for contacts of each case													
Case Information (Confirmed or probable)													
Name	Age (yrs)	Sex (M/F)	Head of Household	Address	District	Date of Symptom Onset	(Confirmed or probable) write C for confirmed and P for probable						
Contact Information													
S. No.	Name	Age (yrs)	Sex (M/F)	Relation to case	Date of last contact with the confirmed or probable case	Address	District	Phone Number	Health Care Worker (Y/N), If yes, what facility	Whether contact converted to suspect	sample collected	Lab result	Outcome Ill/recovered/Death (in case of death –provide details)

To be filled and updated by DSU

Annexure 3:

Contact Follow Up form to be shared DSU to SSU for compilation at the State

S. No.	Name	Age (yrs)	Sex (M/F)	Date of last contact	Day of follow up (Put a 'X' if the contact has no symptom and put a 'V' if the contact has any of the following symptom: Fever/ altered mental status/seizure/headache/Cough/shortness of breath)																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

NOTE: To be shared by DSU to SSU for compilation. State to share the compiled line list with CSU on a daily basis at dirnicd@nic.in; [idsp-
npo@nic.in](mailto:idsp-
npo@nic.in); and ncdcshoc@gmail.com

