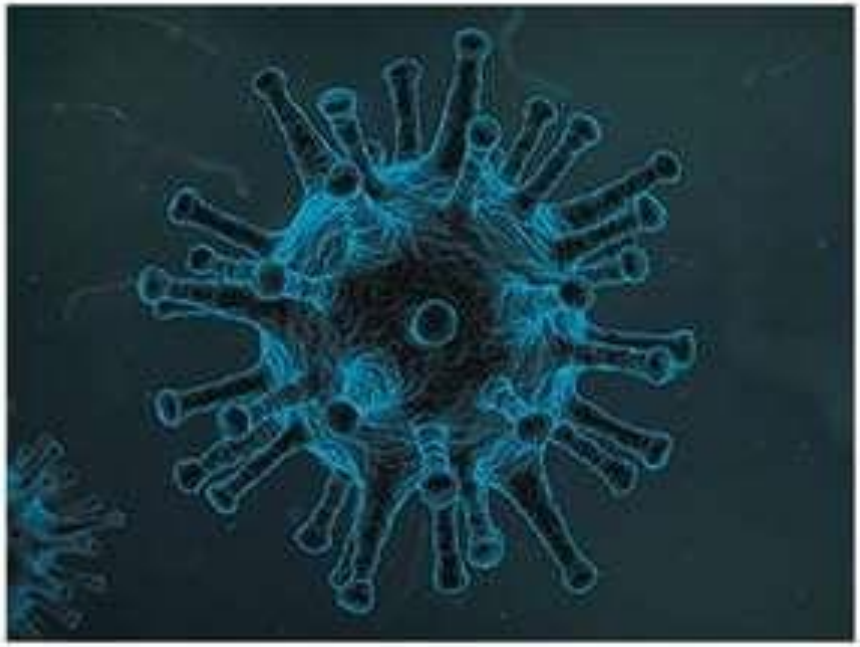
Nipah Virus

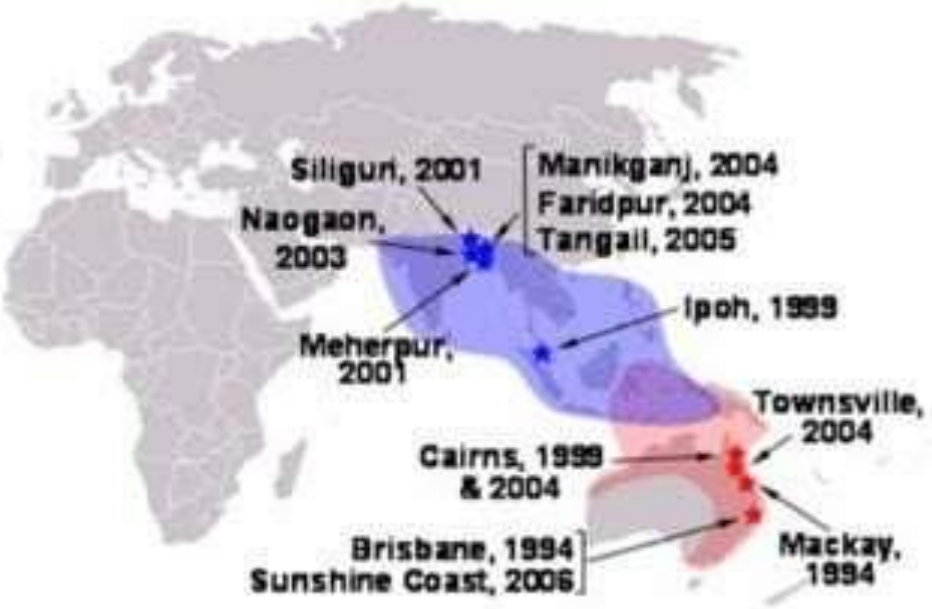
Nipah virus (NiV)

- A paramyxovirus (genus Henipavirus)
- First identified in 1999 in Malaysia caused an outbreak of respiratory and neurological disease in pigs and encephalitis in people.
- NiV is a zoonotic virus (a virus transmitted to humans from animals)



Past Outbreaks

- First recognized in 1999 during an outbreak among pig farmers in Kampung Sungai Nipah, Malaysia.
  - No new outbreaks since 1999.
- First recognized in Bangladesh in 2001 and nearly annual outbreaks have occurred in that country since, with disease also identified periodically in eastern India.
- Serologic evidence for NiV has been found in the known natural reservoir in Cambodia, Thailand, Indonesia, Madagascar, Ghana and the Philippines.



Transmission (1)

- In Malaysia and Singapore, most human infections resulted from direct contact with sick pigs (via respiratory droplets, contact with throat or nasal secretions from the pigs) or their contaminated tissues.

- In the Bangladesh and India outbreaks, consumption of fruits or fruit products (e.g. raw date palm juice) contaminated with urine or saliva from infected fruit bats was the most likely source of infection.

Pteropus bat species

Transmission (2)

- During the later outbreaks in Bangladesh and India, Nipah virus spread directly from human-to-human through close contact with people's secretions and excretions.
- In Siliguri, India, transmission of the virus was also reported within a health-care setting (nosocomial), where 75% of cases occurred among hospital staff or visitors.
- From 2001 to 2008, around half of reported cases in Bangladesh were due to human-to-human transmission through providing care to infected patients

Table 2. Morbidity and mortality due to Nipah or Nipah-like virus encephalitis

(adapted from http://www.searo.who.int/entity/emerging_diseases/links/nipah_virus_outbreaks_sear/en/)

Year(s)	Country	Reported number of human cases	Reported number (%) of deaths among cases
1998-1999	Malaysia Singapore	276	106 (38%)
2001	India	66	45 (68%)
2001	Bangladesh	13	9 (69%)
2003	Bangladesh	12	8 (67%)
2004	Bangladesh	67	50 (75%)
2005	Bangladesh	12	11 (92%)
2007	Bangladesh	18	9 (50%)
2007	India	5	5 (100%)
2008	Bangladesh	11	9 (82%))
2009	Bangladesh	4	1 (25%)
2010	Bangladesh	16	14 (88%)
2011	Bangladesh	44	40 (91%)
2012	Bangladesh	12	10 (83%)
2013	Bangladesh	24	21 (88%)
2014	*Philippines*	*17**	*9 (53%)*
2014	Bangladesh	18	9 (50%)
2015	Bangladesh	9	6 (67%)

nderground consultation

Signs and symptoms

- Human infections range from asymptomatic infection, acute respiratory infection (mild, severe), and fatal encephalitis.

- Fatality rate is estimated at 40% to 75%
  - this rate can vary by outbreak depending on local capabilities for epidemiological surveillance and clinical management.

1. Asymptomatic Infection

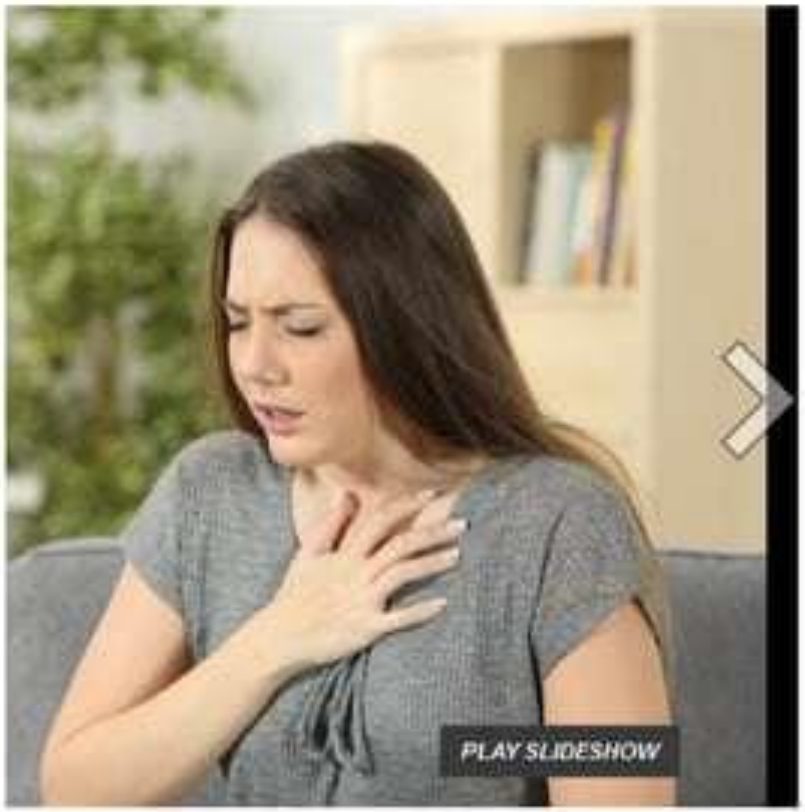
- The incubation period is between 4 and 14 days from contracting the disease to the onset of symptoms.
- However, 45 days of incubation have also been reported in some case.

2. Influenza-Like Symptoms

- fever, sore throat, throat irritation, throbbing headaches, abdominal pain, fainting, nausea, vomiting and myalgia

3. Acute Respiratory Infection

- mild to severe acute respiratory infection.
- wheezing and breathing difficulty, the symptoms lead to atypical pneumonia and other severe problems.



4. Fatal Encephalitis

- fever, headache, vomiting, stiff neck, lethargy, irritability, photophobia, confusion, drowsiness, hallucinations, coma, seizures.

- Most people who survive acute encephalitis make a full recovery
  - ~ 20% are left with residual neurological consequences (seizure disorder and personality changes).
  - A small number subsequently relapse or develop delayed onset encephalitis.

Diagnosis

- Initial signs and symptoms are non-specific and the diagnosis is often not suspected at the time of presentation.
- NiV infection can be diagnosed together with clinical history during the acute and convalescent phase of the disease.
- Main tests including **RT-PCR** from bodily fluids as well as **antibody detection via ELISA.**
- Different tests include:
  - ELISA
  - PCR assay
  - virus isolation by cell culture.

Treatment

- no drugs or vaccines specific for NiV infection although this is a priority disease on the WHO R&D Blueprint.

- Intensive supportive care is recommended to treat severe respiratory and neurologic complications.

Nipah virus in domestic animals

- Outbreaks in pigs and other domestic animals (horses, goats, sheep, cats and dogs)
- Highly contagious in pigs.
- Pigs are infectious during the incubation period (4 to 14 days)
- An infected pig can exhibit no symptoms, but some develop acute feverish illness, labored breathing, and neurological symptoms such as trembling, twitching and muscle spasms.
- Nipah should be suspected if pigs also have an unusual barking cough or if human cases of encephalitis are present.

Reducing the risk of infection in people

- **Bat-to-human transmission**: decreasing bat access to date palm sap and to other fresh food products. Freshly collected date palm juice should be boiled and fruits should be thoroughly washed and peeled before consumption.

- **Animal-to-human transmission**: Gloves and other protective clothing should be worn while handling sick animals or their tissues, and during slaughtering and culling procedures. Avoid being in contact with infected pigs.

- **Human-to-human transmission**: Regular hand washing after contact. Full PPE

Prevention

- Avoid close (unprotected) physical contact with infected people
- Wear NH95-grade and higher masks
- Wash hands regularly with soap
- Avoid consuming partly eaten fruits or unpasteurised fruit juices
- Avoid being around animal pens
- Boil freshly collected date palm juice before consuming
- Thoroughly wash and peel fruits before consuming
- Maintain your and children's personal hygiene
- Cover your household properly

What is Nipah virus?

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NIPAH VIRUS (NIV) INFECTION IS A NEWLY EMERGING ZOONOSIS THAT CAUSES SEVERE DISEASE IN BOTH ANIMALS AND HUMANS

NiV first identified in 1998 during an outbreak in Malaysia

Fruit bats are natural hosts of NiV

PREVIOUS OUTBREAKS IN INDIA

Jan-Feb, 2001 **Siliguri (WB)**

Cases: 86

Deaths: 45

68%

April, 2007 **Nadia (WB)**

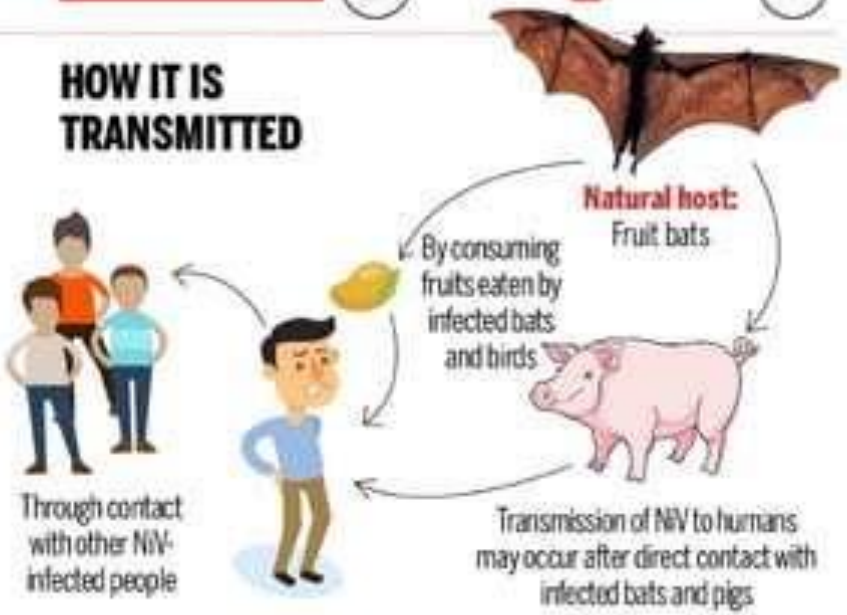
Cases: 5

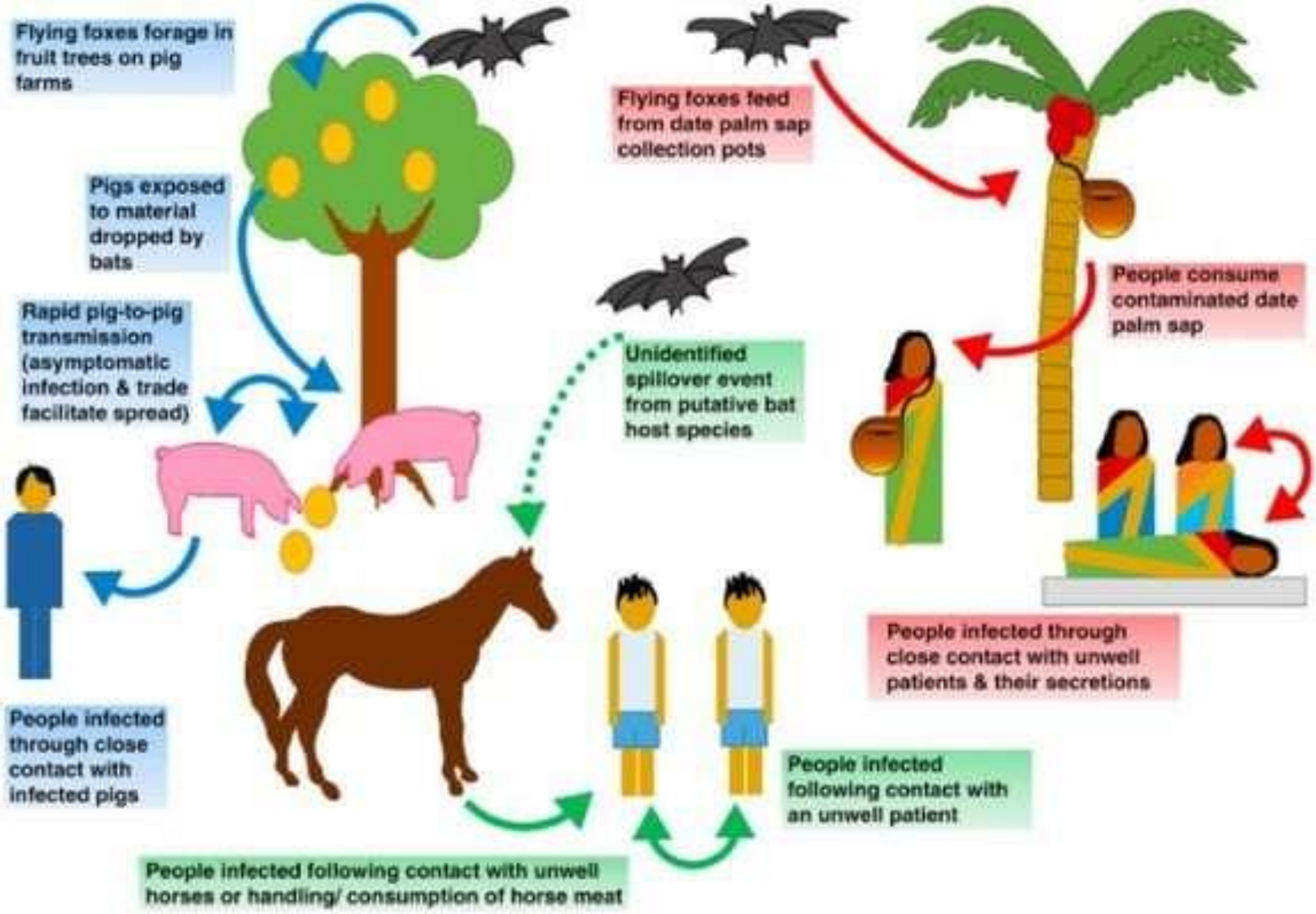
Deaths: 5

Fatality rate

100%

HOW IT IS TRANSMITTED




Flying foxes forage in fruit trees on pig farms
Pigs exposed to material dropped by bats
Rapid pig-to-pig transmission (asymptomatic infection & trade facilitate spread)
Unidentified spillover event from putative bat host species
Flying foxes feed from date palm sap collection pots
People consume contaminated date palm sap
People infected through close contact with unwell patients & their secretions
People infected through close contact with infected pigs
People infected following contact with an unwell patient
People infected following contact with unwell horses or handling/ consumption of horse meat

Thank you