



THE UNIVERSITY OF TENNESSEE
Occupational Health Program

Hantavirus

1.0 Introduction

Hantaviruses are a family of viruses which are spread by specific rodents. Hantavirus in the Americas are known as “New World” hantaviruses and can cause hantavirus pulmonary syndrome (HPS). “Old World” hantaviruses are usually found in Europe and Asia and can cause hemorrhagic fever with renal syndrome (HFRS). Each hantavirus variant has a specific rodent host species and is spread to people via aerosolized virus that can be shed in rodent feces, saliva, and urine. Although atypical, hantavirus can be transmitted via a bite from the infected rodent host. The most notable hantavirus in the United States that can cause HPS is the Sin Nombre virus which is spread by the deer mouse. HPS disease can be fatal, with a mortality rate of 38%

Rodents in the U.S. that carry hantavirus include:

- Cotton Rat (*Sigmodon hispidus*) found in the southeast US and Central and South America
- Deer Mouse (*Peromyscus maniculatus*) found in North America in woodlands and desert areas
- Rice Rat (*Oryzomys palustris*) found in southeast US and Central America in marshy and semi aquatic areas
- White-Footed Mouse (*Peromyscus leucopus*) found throughout most of North America, but are typically not found west of the Rocky Mountains.

2.0 People at Risk

People who come in contact with rodent infestations in and around the home remain at primary risk for hantavirus exposure and HPS. Any activity that puts individuals in contact with rodent droppings, urine, saliva, or nesting materials poses a risk of infection. Wildlife researchers may also encounter rodent infestations in the field. While HPS is typically seen with wild rodents, some cases have occurred in laboratory rodents, placing lab animal workers at risk.

3.0 Transmission

Airborne:

Hantavirus transmission originates from rodents shedding the virus in their urine, droppings and saliva. Viral transmission occurs when people breath in contaminated air. When fresh rodent urine, droppings, or nesting materials are disturbed, tiny droplets containing the virus may be aerosolized creating a route for airborne transmission.

Contact:

Hantavirus can also be transmitted by handling items contaminated with rodent urine, droppings or saliva and then touching your nose or mouth. People can also contract hantavirus by ingesting food contaminated by urine, droppings, or saliva from an infected rodent.

4.0 Symptoms

The incubation period for Hantavirus is not well documented due to the small number of cases. According to the CDC, symptoms develop between 1 and 8 weeks after exposure to fresh urine, droppings or saliva of infected rodents.

Early Symptoms:

- Fatigue
- Fever
- Muscle aches (especially thighs, hips, back and shoulders)

Late Symptoms occurring 4-10 days after the initial phase of the illness include:

- Coughing
- Shortness of breath
- Chest tightness
- Lungs filling with fluid

5.0 Diagnosis, Prevention and Treatment

HPS prevention includes:

- wearing appropriate PPE when caring for colony laboratory rodents. Proper PPE includes disposable gloves, lab coats or disposable gowns. When encountering wild rodent infestations or working with wild-caught or suspect rodents it is also advised to wear a N95 respirator.
- practicing good hygiene, including thorough hand-washing after coming in contact with mouse droppings, urine, or saliva

HPS diagnosis:

HPS is often difficult to diagnose because the symptoms (fever, muscle aches and fatigue) are the same as those of the common flu. If the individual has been recently exposed to a rodent infestation and is also having shortness of breath, accompanied with fever, muscle aches, and fatigue, that would strongly suggest HPS, and the individual should seek medical attention immediately. It is essential to inform the health care provider of the rodent exposure.

HPS treatment:

There is no specific treatment, cure, or vaccine for HPS. If infected individuals are recognized early and receive medical treatment, they may have a better outcome. Affected individuals are typically intubated and given oxygen therapy to help them get through the period of severe respiratory distress.

6.0 Resources

For additional information, please use the following link: [CDC Hantavirus Link](#)

For further information related to possible zoonotic disease exposure, or further related resources, please contact UT Occupational Health Nurse Bryan Cranmore RN, COHN at bcranmore@utk.edu, or for urgent response the OHP nurse can be reached at 865-755-8924

Reviewed and Approved 10/28/2022

A handwritten signature in blue ink that reads "Bryan Cranmore RN". The signature is written in a cursive style and is contained within a rectangular box.

Bryan Cranmore RN, COHN
Occupational Health Nurse