

# Hantavirus

## DISEASE IN ANIMALS

Hantavirus is caused by a related group of viruses that are host-adopted to specific rodent reservoir species.

**Reporting:** Hantavirus in animals is not required to be reported to the Ohio Department of Agriculture or USDA APHIS Veterinary Services. Confirmed cases are encouraged to be reported to the [local health department](#) as a sentinel event.

**Transmission:** Virus is shed in the saliva, urine, and droppings of infected animals for long periods. Transmission occurs through direct contact and aerosolization. The virus can remain active in the environment for a few days though sunlight will decrease survival and freezing may increase it.

<i>U.S. Hantavirus Associated with Hantavirus Pulmonary Syndrome (HPS)</i>		
<i>Virus</i>	<i>Principal Reservoir</i>	<i>Distribution of the Virus</i>
Sin Nombre*	Peromyscus maniculatus (deer mouse)	U.S. and Canada
New York	Peromyscus leucopus (white-footed mouse)  Peromyscus maniculatus (deer mouse)	U.S.
Black Creek Canal	Sigmodon hispidus (cotton rat)	U.S.
Bayou	Oryzomys palustris (rice rat)	U.S.
Seoul	Rattus rattus & Rattus norvegicus) (black and brown rat)	U.S.
*The majority of HPS cases in the U.S. are caused by Sin Nombre		

**Clinical signs:** Reservoir rodent species do not typically develop overt signs of illness, though Sin Nombre has been associated with a lower neonatal survival rate. Domesticated rodents may become infected and occasionally develop clinical signs such as fatal pulmonary disease or meningoencephalitis. Other domestic mammals have shown serologic evidence of exposure but to date have not developed disease.

### **Diagnosics:**

**Serology:** IFA (detects group specific antibodies) and Plaque-reduction neutralization (determines species)  
Antigen detection: Western blot, ELISA RT PCR and Immunohistochemistry

### **Case classification:**

- Suspected: a clinical case with signs consistent with hantavirus
- Probable: a clinically suspect case with laboratory evidence from a screening or unvalidated test (e.g. single serology)
- Confirmed: a case that meets confirmatory testing criteria determined by a state or federal diagnostic laboratory (e.g. antigen detection, four-fold increase in serological titer, PRNT)

## DISEASE IN HUMANS

Humans can develop two types of hantaviral disease: Hemorrhagic Fever with Renal Syndrome (HFRS) in the old world and Hantavirus Pulmonary Syndrome (HPS) in the new world. The incubation period can be as long as 45 days.

**Reporting:** Report by the end of the business day any suspected human illness or positive laboratory result to the LHD where the patient resides. If unknown, report to the LHD of the health provider or laboratory.

**Human illness:** Hantavirus pulmonary syndrome (HPS), commonly referred to as hantavirus disease or simply hantavirus, is a febrile illness characterized by bilateral interstitial pulmonary infiltrates and respiratory compromise usually requiring supplemental oxygen and clinically resembling acute respiratory disease syndrome (ARDS). The typical prodrome consists of fever, chills, myalgia, headache and gastrointestinal symptoms, such as abdominal pain, nausea, and vomiting. Typical clinical laboratory findings include hemoconcentration, left shift in the white blood cell count, neutrophilic leukocytosis, thrombocytopenia and circulating immunoblasts.

The hospital course is characterized by fever, hypoxia, and hypotension (*MMWR* 1993; Vol. 42 (42), p. 819). The case fatality rate is 44 percent.

**Personal protection:** It is recommended to avoid contact with wild rodents and their excreta, especially in affected areas. Efforts should be taken to prevent rodents from nesting near areas of human habitation. In addition to wearing gloves to prevent bites, those working with rodents in high-risk areas should wear respirators with N-100 filters. When cleaning up buildings contaminated with rodent feces, open windows and doors for good air circulation and wet down area to minimize aerosolization of dust.

## FOR MORE INFORMATION

### **Disease in Animals**

[Iowa State University Center for Food Security and Public Health Animal Disease Factsheets](#)

### **Disease in Humans**

[CDC--Hantavirus](#)

[CDC--Precautions for Workers Regularly Exposed to Rodents](#)

[ODH Infectious Disease Control Manual](#)