

# Hantavirus Pulmonary Syndrome (HPS)

## What is HPS?

Hantavirus Pulmonary Syndrome (HPS) is a severe, sometimes fatal, respiratory disease in humans caused by infection with hantaviruses.

Anyone who encounters rodents that carry hantaviruses is at risk of HPS. Rodent infestation in and around the home remains the primary risk for hantavirus exposure. Even healthy individuals are at risk for HPS infection if exposed to the virus.

To date, no cases of HPS have been reported in the United States in which the virus was transmitted from one person to another. In fact, in a study of health care workers who were exposed to either patients or specimens infected with related types of hantaviruses (which cause a different disease in humans), none of the workers showed evidence of infection or illness.

In Chile and Argentina, rare cases of person-to-person transmission have occurred among close contacts of a person who was ill with a type of hantavirus called Andes virus.

## What kind of germ is HPS?

The hantaviruses that cause human illness in the United States are not known to be transmitted by any types of animals other than certain species of rodents. Dogs and cats are not known to carry hantavirus; however, they may bring infected rodents into contact with people if they catch such animals and carry them home.

## Diagnosing HPS

Diagnosing HPS in an individual who has only been infected a few days is difficult, because early symptoms such as fever, muscle aches, and fatigue are easily confused with influenza. However, if the individual is experiencing fever and fatigue and has a history of potential rural rodent exposure, together with shortness of breath, would be strongly suggestive of HPS. If the individual is experiencing these symptoms, they should see their physician immediately and mention their potential rodent exposure.

## How can HPS be treated?

There is no specific treatment, cure, or vaccine for hantavirus infection. However, we do know that if infected individuals are recognized early and receive medical care in an intensive care unit, they may do better. In intensive care, patients are intubated and given oxygen therapy to help them through the period of severe respiratory distress.

The earlier the patient is brought in to intensive care, the better. If a patient is experiencing full distress, it is less likely the treatment will be effective.

Therefore, if you have been around rodents and have symptoms of fever, deep muscle aches, and severe shortness of breath, see your doctor immediately. Be sure to tell your doctor that you have been around rodents—this will alert your physician to look closely for any rodent-carried disease, such as HPS.

## Are there any long-term effects of HPS?

Previous observations of patients that develop HPS from New World Hantaviruses recover completely. No chronic infection has been detected in humans. Some patients have experienced longer than expected recovery times, but the virus has not been shown to leave lasting effects on the patient.

### **How People Become Infected with Hantaviruses**

In the United States, deer mice (along with cotton rats and [rice rats](#) in the southeastern states and the white-footed mouse in the Northeast) are reservoirs of the hantaviruses. The rodents shed the virus in their urine, droppings, and saliva. The virus is mainly transmitted to people when they breathe in air contaminated with the virus.

When fresh rodent urine, droppings, or nesting materials are stirred up, tiny droplets containing the virus get into the air. This process is known as "[airborne transmission](#)".

There are several other ways rodents may spread hantavirus to people:

- If a rodent with the virus bites someone, the virus may be spread to that person, but this type of transmission is rare.
- Scientists believe that people may be able to get the virus if they touch something that has been contaminated with rodent urine, droppings, or saliva, and then touch their nose or mouth.
- Scientists also suspect people can become sick if they eat food contaminated by urine, droppings, or saliva from an infected rodent.

The hantaviruses that cause human illness in the United States cannot be transmitted from one person to another. For example, you cannot get these viruses from touching or kissing a person who has HPS or from a health care worker who has treated someone with the disease.

In Chile and Argentina, rare cases of person-to-person transmission have occurred among close contacts of a person who was ill with a type of hantavirus called Andes virus.

### **People at Risk for Hantavirus Infection**

Anyone who comes into contact with rodents that carry hantavirus is at risk of HPS. Rodent infestation in and around the home remains the primary risk for hantavirus exposure. Even healthy individuals are at risk for HPS infection if exposed to the virus.

Any activity that puts you in contact with rodent droppings, urine, saliva, or nesting materials can place you at risk for infection. Hantavirus is spread when virus-containing particles from rodent urine, droppings, or saliva are stirred into the air. It is important to avoid actions that raise dust, such as sweeping or vacuuming. Infection occurs when you breathe in virus particles.

### **Potential Risk Activities for Hantavirus Infection**

Opening or cleaning cabins, sheds, and outbuildings, including barns, garages and storage facilities, that have been closed during the winter is a potential risk for hantavirus infections, especially in rural settings.

Cleaning in and around your own home can put you at risk if rodents have made it their home too. Many homes can expect to shelter rodents, especially as the weather turns cold. Please see our prevention information on how to properly clean rodent-infested areas.

Construction, utility and pest control workers can be exposed when they work in crawl spaces, under houses, or in vacant buildings that may have a rodent population.

Campers and hikers can also be exposed when they use infested trail shelters or camp in other rodent habitats.

The chance of being exposed to hantavirus is greatest when people work, play, or live in closed spaces where rodents are actively living. However, recent research results show that many people who have become ill with HPS were infected with the disease after continued contact with rodents and/or their droppings. In addition, many people who have contracted HPS reported that they had not seen rodents or their droppings before becoming ill. Therefore, if you live in an area where the carrier rodents, such as the deer mouse, are known to live, take sensible precautions-even if you do not see rodents or their droppings.

### **Prevention**

Eliminate or minimize contact with rodents in your home, workplace, or campsite. If rodents don't find that where you are is a good place for them to be, then you're less likely to come into contact with them. Seal up holes and gaps in your home or garage. Place traps in and around your home to decrease rodent infestation. Clean up any easy-to-get food.

Recent research results show that many people who became ill with HPS developed the disease after having been in frequent contact with rodents and/or their droppings around a home or a workplace. On the other hand, many people who became ill reported that they had not seen rodents or rodent droppings at all. Therefore, if you live in an area where the carrier rodents are known to live, try to keep your home, vacation place, workplace, or campsite clean.