

## **Hantavirus Pulmonary Syndrome (HPS)**

### **What is hantavirus pulmonary syndrome (HPS)?**

HPS disease is a rare but serious illness of the lungs caused by a family of viruses known as hantaviruses. HPS is spread to humans by rodents. In 1993, the first cases in the United States were diagnosed in the southwestern part of the country. Isolated cases of HPS are now being diagnosed in other parts of the country and several different types of hantaviruses have been identified.

### **Who gets HPS?**

Persons who have exposure to wild rodents or areas infested with rodents are at highest risk of getting HPS. The hantavirus is carried by infected rodents, primarily deer mice in the southwest US, cotton and rice rats in the south, and the white-footed mouse in the northeastern coastal area.

### **How is HPS spread?**

The main way that the HPS virus is spread to humans is by breathing air contaminated with rodent urine, droppings or saliva. It can also be transmitted by handling rodents or by touching your nose or mouth after handling contaminated materials. A rodent's bite can also spread the virus. There is no evidence that cats, dogs, farm animals, or insects transmit the disease to humans. You cannot get HPS from another person.

### **What are the symptoms of HPS?**

The initial symptoms are similar to influenza symptoms and include fever ( $\geq 101^{\circ}$  F), fatigue, and muscle aches. Other common symptoms that may occur are headache, dizziness, chills, nausea, vomiting, diarrhea, and abdominal pain. Later symptoms of HPS are coughing and shortness of breath caused by fluid buildup in the lungs. These breathing problems start 4-10 days after the first symptoms and can progress to respiratory failure and sometimes death. In some cases of HPS, the kidneys and other organs will stop working.

### **How soon after exposure do symptoms appear?**

Symptoms of HPS can start from one to six weeks after exposure, but usually start about two weeks after exposure.

### **How is HPS diagnosed?**

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. If the individual is experiencing fever, fatigue, and shortness of breath and has a history of potential rural rodent exposure, it would be strongly suggestive of HPS. A person experiencing these symptoms should see a doctor immediately and mention the potential rodent exposure.

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### What is the treatment for HPS?

At the present time, there is no specific treatment for HPS. Patients with HPS require hospitalization for intensive care, and often require intubation and a ventilator to help them breathe.

### How can HPS be prevented?

Keep your home clean to discourage rodents. Wash dishes promptly, clean counters and floors, put pet food and water away at night, and store food and garbage in containers with tight lids. Prevent mice from entering your house by sealing all openings with caulking or steel wool. Remember, rodents can squeeze through holes as small as a dime.

- Follow these precautions when removing a dead rodent or cleaning an area where rodents have been:
  - Wear rubber, latex, vinyl or nitrile gloves.
  - Don't stir up and breathe dust.
  - If you are going into a building, garage or basement that has been closed, open it to air out for at least 30 minutes before spending time inside.
  - Wet down dusty areas that may be contaminated with rodent droppings or urine *before* cleaning them up. (You can use a commercial disinfectant or prepare a solution of 1 ½ cups bleach to 1 gallon of water.) Use a spray bottle to mist the area and gently but thoroughly wet it. A hard spray will stir up more dust.
  - Wipe up any debris; do not use a broom or vacuum cleaner because they create dust in the air.
  - Dead rodents should be sprayed with disinfectant and then placed in a plastic bag containing enough disinfectant to thoroughly wet the carcasses.
  - When cleanup is complete, seal the bag and place it into a second plastic bag. Then dispose of it by burying, burning or placing it in an appropriate waste disposal system.
  - Before removing gloves, wash gloved hands in disinfectant and then in soap and water.
  - Thoroughly wash hands with soap and water after removing gloves.
- Control rodents outside your house:
  - Clear brush and grass away from the foundation.
  - Place woodpiles and garbage cans on platforms at least 12 inches off the ground and keep them at least 100 feet from the house.
  - Haul away junk that can provide homes for rodents.
- When camping or sleeping outdoors, avoid disturbing or sleeping near rodent droppings or burrows.
  - Avoid sleeping on bare ground. Use a mat or elevated cot if available.
  - Store foods in rodent-proof containers and promptly discard, bury or burn all garbage.

### How can I get more information about HPS?

- 1) If you have concerns about HPS, contact your healthcare provider.
- 2) Call your local health department. A directory of local health departments is located at <http://www.vdh.virginia.gov/LHD/index.htm>.
- 3) Visit the Centers for Disease Control and Prevention website at <http://www.cdc.gov/hantavirus/>.