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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. While most cases are still reported from the southwestern part of the United States, isolated cases of HPS have been diagnosed in other parts of the country and several different types of hantaviruses have been identified.

Who gets HPS?

People who have exposure to wild rodents or areas infested with rodents are at the highest risk of getting HPS. The hantavirus is carried by infected rodents, primarily deer mice in the southwest, cotton and rice rats in the south, and the white-footed mouse in the northeastern coastal area. HPS is rarely reported in Virginia and 94% of Hantavirus infections occur west of the Mississippi River. The last time a Virginia resident was reported with HPS was in 2021 and prior to that was in 1993 which was prior to it becoming a nationally notifiable disease in 1995.

How is HPS spread?

The main way that the HPS virus spreads to humans is by breathing air contaminated with rodent urine, droppings or saliva. It can also be transmitted by touching your nose or mouth after handling contaminated materials. There are rare reports of rodent bites transmitting hantavirus. There is no evidence that cats, dogs, farm animals, or insects transmit the disease to humans. The hantaviruses that are found throughout the United States are not known to spread between people.

What are the symptoms of HPS infection?

The initial symptoms are similar to influenza symptoms and include fever, fatigue, and muscle aches. Other common symptoms that may occur are headache, dizziness, chills, muscle aches, 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.

How soon after exposure do symptoms appear?

Symptoms of HPS can start from one to eight weeks after exposure to fresh urine, droppings, or saliva of infected rodents.

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

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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 with these symptoms should see a doctor immediately and mention the potential rodent exposure so appropriate testing can be performed and medical care can be provided.

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. If mice or rats are in or around your home, it's important to clean up after them safely and avoid contact with their urine, droppings, saliva, and nesting materials.

Follow these precautions when removing a dead rodent or cleaning an area where rodents have been:

- Wear rubber, latex, vinyl or nitrile gloves.
- 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 debris; **do not sweep or vacuum** dry debris because it creates 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 wood piles 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?

- If you have concerns about HPS, contact your healthcare provider.
- Call your local health department. You can find your local health department at vdh.virginia.gov/health-department-locator/
- Visit the CDC page on hantaviruses at cdc.gov/hantavirus/about/index.html
- Learn how to safely clean up on CDC's How to Safely Clean Up After Rodents at cdc.gov/health-pets/rodent-control/clean-up.html
- Visit the CDC page on Reported Cases of Hantavirus Disease at cdc.gov/hantavirus/data-research/cases/index.html

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