

Diseases, Disorders and Injuries

Hantavirus

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What is hantavirus?

Hantavirus is a virus that is found in the urine, saliva, or droppings of infected deer mice and some other wild rodents (cotton rats, rice rats in the southeastern United States and the white-footed mouse and the red-backed vole). It causes a rare but serious lung disease called hantavirus pulmonary syndrome (HPS). The virus does not remain active for long once outside of its host -- less than 1 week outdoors and a few hours when exposed to direct sunlight.

How common is hantavirus?

Hantavirus was first identified in Canada in 1994. When researchers reviewed other earlier cases, they were able to positively identify that there were at least 3 other cases occurring before 1994, the first happening in 1989. Since 1989, there have been 109 confirmed hantavirus cases and 27 deaths in Canada according to the Public Health Agency of Canada (as of January 2015).

How can hantavirus enter my body?

People can contract the hantavirus infection through inhalation of respirable droplets of saliva or urine, or through the dust of feces from infected wild rodents, especially the deer mouse. Transmission can also occur when contaminated material gets into broken skin, or possibly, ingested in contaminated food or water. Person-to-person transmission in North America has not been reported. A few situations of hantavirus pulmonary syndrome in South America suggests person-to-person transmission is possible. However, the viruses isolated in South America are genetically distinct from those described in North America.

How does hantavirus affect my health?

The two main types of disease caused by a hantavirus are hantavirus pulmonary syndrome (found in North America) and haemorrhagic fever with renal syndrome (found mainly in Europe and Asia).

Symptoms of hantavirus pulmonary syndrome appear within 1 to 5 weeks after exposure. The average is 2 to 4 weeks. This disease is extremely serious since about 40% of the people who get the disease die. The disease begins as a flu-like illness. In the early stage, a worker may experience fever, chills, muscle aches, headaches, nausea, vomiting, and shortness of breath, rapid heartbeat, and gastrointestinal problems. However, the disease progresses rapidly, and infected people experience an abnormal fall in blood pressure and their lungs will fill with fluid. Severe respiratory failure, resulting in death, can occur within a few days of the early stage symptoms.

Symptoms of haemorrhagic fever with renal syndrome appear within 1 to 2 weeks after exposure. Symptoms include intense headaches, back and stomach pain, fever, chills, nausea, blurred vision and may include additional symptoms such as flushed face, inflamed or red eyes, rash, and low blood pressure.

What is the treatment for hantavirus pulmonary syndrome?

There is no specific vaccine, treatment or cure for hantavirus infection but early recognition and medical care in an intensive care unit can help with recovery. Infected people may be given medication for fever and pain and oxygen therapy.

What occupations are at risk?

Cases of hantavirus infection contracted in Canada and the United States have been associated with these activities:

- Sweeping out a barn and other ranch buildings.
- Trapping and studying mice.

- Using compressed air and dry sweeping to clean up wood waste in a sawmill.
- Handling grain contaminated with mouse droppings and urine.
- Entering a barn infested with mice.
- Planting or harvesting field crops.
- Occupying previously vacant dwellings.
- Disturbing rodent-infested areas while hiking or camping.
- Living in dwellings with a sizable indoor rodent population.

For workers that might be exposed to rodents as part of their normal job duties, employers are required to comply with relevant occupational health and safety regulations in their jurisdiction. Typically, employers are required to develop and implement an exposure control plan to eliminate or reduce the risk and hazard of hantavirus in their workplace.

How can we prevent exposure to hantavirus?

Attempt to reduce the presence of mice and limit contact with their droppings, urine and saliva by:

- Storing food (including pet food), water and garbage in heavy plastic or metal containers with tight fitting lids.
- Sealing any holes in structures where mice may enter.
- Cutting back thick brush and keep grass short. Keep woodpiles away from the building.
- Using rubber or plastic gloves when cleaning up signs of rodents, handling dead rodents, or other materials. When finished, clean gloves with soapy water before taking them off. Wash hands with soapy water (again) after removing the gloves.
- Setting traps when necessary. Put rodents in a plastic bag, seal the bag, and dispose.

Since human infection occurs through inhalation of contaminated material, clean-up procedures must be performed in a way that limits the amount of airborne dust. Treat all mice and droppings as being potentially infected.

Ventilate the space by opening doors and windows for at least 30 minutes before activities begin and keep the space ventilated while cleaning and for a period before re-entry. If there is reason to suspect that rodents have access to heating and cooling ventilation systems, contact a professional rodent exterminating service or qualified ventilation professional.

People involved in general clean-up activities where there is not heavy accumulation of droppings should wear disposable protective clothing and gloves (neoprene, nitrile, or latex-free), rubber boots and a disposable N95 respirator. For cleaning up rodent contaminated areas with heavy accumulations of droppings it is necessary to use powered air-purifying (PARP) or air-supplied respirators with P100 filters and eye or face protection to avoid contact with any aerosols.

Dead mice, nests, and droppings should be soaked thoroughly with a solution that is 1 part sodium hypochlorite (household bleach) to 10 parts water, or a household disinfectant. Follow safe work procedures when working with [bleach](#), or the manufacturer's instructions or [safety data sheets](#) when using disinfecting products. Allow the solution or disinfectant to soak on the droppings, nest, or dead mice for around 5 minutes before beginning cleaning. These disinfectants kill the virus and reduce the chance of further transmission.

Clean with disposable mops or towels. Launder or steam clean objects made of cloth, such as furniture, carpets, clothes, bedding, toys, etc. Do not use a vacuum or sweep in a way that may create an airborne dust.

Ultraviolet rays in sunlight will also inactivate hantaviruses. For books, papers and other non-washable items that cannot be cleaned or thrown away, place the object in sunlight for several hours, or in an area free of rodents for approximately a week. After that time, the virus should no longer be infectious. Wear gloves and wipe the items with a cloth moistened with disinfectant.

The contaminated material should be placed in a plastic bag and sealed for disposal. Disinfect reusable personal protective equipment by wet-wiping all respirator surfaces, gloves, rubber boots and goggles with disinfectant. All disposable protective clothing, gloves and respirators should be placed in plastic bags and sealed for disposal. Please contact your local environmental authorities about approved disposal methods.

Thoroughly wash hands with soap and water after removing the gloves.

Where can I get more information?

For more details on risk assessment and precautions for specific situations not clearly addressed by existing guidelines, contact specific agencies responsible for such detailed information, for example, your local public health office.

[Hantavirus](#). Public Health Agency of Canada

[Hantavirus](#). US Centers for Disease Control

[A Hantavirus Exposure Control Program for Employers and Workers](#). Worksafe BC

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