

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) and a disease that affects the kidneys called Haemorrhagic Fever with Renal Syndrome (HFRS).

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 hantavirus by:

- breathing in virus particles from rodent droppings, saliva or urine,
- touching contaminated objects or surfaces,
- ingesting contaminated food or water, or
- being bitten by an infected rodent (in rare cases).

Person-to-person transmission in North America has not been reported. A few cases of hantavirus pulmonary syndrome, associated with Andes virus in South America, suggest person-to-person transmission is possible through close, prolonged contact. 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 6 weeks after exposure. The average is 2 to 4 weeks. This disease is extremely serious and is fatal in about 40% of the people who get the disease. The disease begins as a flu-like illness. In the early stage, a worker may experience fever, chills, muscle aches, headaches, nausea, vomiting, 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. Haemorrhagic fever with renal syndrome is fatal in approximately 1% and 12% of cases.

What is the treatment for hantavirus pulmonary syndrome?

There is no specific vaccine, treatment, or cure for hantavirus infection. 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?

Anyone who may come into contact with rodents may be at risk of contracting hantavirus. Occupations with an increased risk of exposure include:

- Agriculture workers
- Construction workers
- Forestry workers
- Hunters
- Janitorial workers
- Military personnel
- Pest control workers
- Restoration workers
- Transportation workers
- Trappers

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 who 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 of hantavirus in their workplace.

How can workplaces reduce exposures to hantavirus?

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

- Storing food (including pet food) and garbage in heavy plastic or metal containers with no holes and tight-fitting lids.
 - Putting water and food away overnight.
 - Sealing any holes in structures where mice may enter.
 - Cutting back thick brush and keeping grass and shrubbery short.
 - Keeping woodpiles at least 30 metres away from buildings.
 - Setting traps when necessary. Always read and follow the instructions.
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How can workplaces clean up contaminated areas?

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 rodents and droppings as potentially infected.

Generally, the steps for cleaning contaminated areas include:

- 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.
- Put on personal protective equipment, including:
 - A fit-tested disposable N95 respirator
 - Disposable gloves (for example, neoprene, nitrile, or latex-free gloves)
 - Rubber boots or disposable shoe covers
- Soak the material thoroughly with a solution that is 1 part sodium hypochlorite (household bleach) to 9 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 for around 10 minutes before beginning cleaning. These disinfectants kill the virus and reduce the chance of further transmission.
- Scoop the material using disposable mops or towels into a double plastic bag and seal it for disposal.
- Clean the area with disposable mops, towels, or a wet mop. Launder or steam clean objects made of cloth, such as furniture, carpets, clothes, bedding, toys, etc.
- Before taking your gloves off, wash the outside of the gloves using soap and water or a disinfectant. Put them in a sealed plastic bag for disposal.
- Place any disposable personal protective equipment in a sealed plastic bag for disposal.

- If a wet mop was used to clean the area, use disinfectant and hot soapy water to clean the mop.
- Wash any exposed skin using soap and water.

Please contact your local [environmental authorities](#) about approved disposal methods.

If there is reason to suspect that rodents have access to heating and cooling ventilation systems, contact a professional rodent exterminating service or a qualified ventilation professional.

For cleaning up areas that are heavily contaminated, additional precautions may be required, including the use of High Efficiency Particulate Air (HEPA) vacuums and powered air-purifying respirators with P100 filters.

What should I do if I come into contact with a rodent suspected of having hantavirus?

Inform your employer and a health care provider right away if you have had contact with rodents, their droppings, or urine, or if you have any symptoms, even if they are mild. Be sure to mention that you have had contact with rodents or their droppings or urine.

Where can I get more information?

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

- [Hantaviruses](#). Public Health Agency of Canada
- [About Hantavirus](#). US Centers for Disease Control
- [A Hantavirus Exposure Control Program for Employers and Workers](#). WorkSafe BC

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