What is hantavirus infection?

Hantavirus infection is a rare but serious illness. Typical symptoms are flu-like and include fever, headache, nausea, vomiting, muscle aches, diarrhea, abdominal pain and shortness of breath. These symptoms can occur any time between three days to six weeks (usually occurring around 14 days) after exposure. Infection without symptoms is rare. Disease due to infection with North American hantaviruses is called Hantavirus Pulmonary Syndrome (HPS).

Although not believed to be caused by a new virus, the condition was first described in the southern United States in 1993. Hantavirus Pulmonary Syndrome is rare in Canada. Laboratory-confirmed cases of HPS have been reported in Canada since active surveillance began in 1994. As of May 2002, 38 cases of HPS are confirmed to have been contracted in Canada. All of these cases have been in western Canada (two in Manitoba). There have been 15 deaths. Many of these cases were caused by exposure to the virus in or around the home, or during ranch or farm work, with all cases occurring in rural settings.

How is hantavirus infection spread?

The usual host of this virus is the deer mouse, although other rodent species have been shown to be infected. The deer mouse can be pale gray to reddish brown, and has white fur on its belly, feet and underside of the tail. It is found widely throughout the United States and Canada. The deer mouse lives primarily in rural and semi-rural areas, but can also reside in urban centres. Although deer mouse numbers may vary with habitat and location, a recent survey in southern Manitoba found that deer mice were the dominant species representing over 95% of the mice caught. Deer mice frequently invade homes, old buildings or barns, and sometimes cars, riding mowers and grain augers. Surveys in Manitoba have shown that about 11% of deer mice have been infected with the virus, and that infected deer mice are found in many places in the province.

Hantaviruses are rarely, if ever, spread from person to person and this has never been documented in North America. Hantaviruses are not spread from pets or livestock. However, cats and dogs may bring infected deer mice into contact with humans.

The virus spreads to people when they:

1. Breathe air contaminated by deer mouse saliva, urine or feces containing infectious hantaviruses; or
2. Accidentally rub eyes, mouth or broken skin with hantavirus-infected deer mouse saliva, urine or feces.

In theory, transmission might also occur by:

1. Eating food contaminated by infected deer mouse saliva, urine or feces; or
2. Being bitten by an infected deer mouse.

What safety measures can be taken?

Groups that are likely at an increased risk because of routine activities include:

- Homeowners
- Cottagers
- Campers
- Farmers
- Ranchers
- Hunters

Specific risk factors that have been associated with contracting HPS in Canada include:

- Sweeping or vacuuming areas contaminated with deer mice feces, urine or rodent nests (for example, cleaning cabins, barns, graineries);
- Abandoned vehicles;
- Handling firewood.

The following precautions are recommended:

1. Points of entry into buildings, such as cracks in the foundation or holes, should be sealed using steel wool, metal roof flashing or cement. Mice can squeeze through cracks as small as a dime.
2. Discourage rodents from living in buildings and homes by using rodent-proof storage containers for food, pet and animal food, grain and garbage. Clean up spilled/dropped food in eating areas. Other measures include:
   - Keeping grass short and yards clean;
   - Placing wood piles 100 feet or more from the home;
   - Removing abandoned vehicles, discarded tires and old, unused buildings that may serve as nesting sites;
   - Securing garbage with tight-fitting lids;
• using snap-traps to remove mice from homes; and
• the use of poison. Poisons can be dangerous and should
be used with caution and on a short-term basis while
other measures take effect. If poison is used, it should be
placed out of reach of children, pets or livestock.

3. Handle dead rodents (or nests) while wearing plastic or
rubber gloves. Wet carcasses (or nesting materials) with
bleach disinfectant (one part household bleach plus nine
parts water, e.g., 100 ml bleach plus 900 ml water); allow
10 minutes for disinfectant to act, and place in doubled
plastic bags. Burning is another option as is deep burial (two
feet). Clean all traps, wash plastic or rubber gloves with
disinfectant before taking them off and wash hands with
soap and water after handling carcasses or traps. Testing
rodents for the presence of hantavirus is not recommended.

4. When cleaning up areas/objects contaminated by rodent
urine, feces or nests:
• open windows and doors for 30 minutes before and after
disinfecting;
• dampen areas contaminated with rodent droppings with
bleach disinfectant (see 3 above); however, if area is
carpeted use a mixture of water, detergent and
commercially available disinfectant such as Lysol.
Commercial-grade steam cleaning or shampooing is also
an alternative for carpets;
• remove droppings by damp mopping (i.e., wiping area
with a mop or cloth dampened with disinfectant),
preferably twice. NEVER REMOVE DROPPINGS BY
SWEEPING OR VACUUMING;
• wear plastic or rubber gloves, as well as full-length
clothing during clean-up to minimize contact with skin;
• use gloves to handle soiled clothes and wash laundry with
hot water and detergent, or soak it in hot, soapy water
until it can be washed. Put in dryer on high-setting, or
allow to dry in the sun;
• if dust cannot be avoided in an area that has to be
cleaned, respirator equipment with N-100 filters should
be used as a minimum (available from safety equipment
stores). For extremely dusty and lengthy exposures, other
options are available (check with safety equipment stores
or Workplace Safety and Health, 945-6848). The use of
goggles in these situations is also advised;
• respirators are not considered protective if facial hair
interferes with the face seal, since proper fit cannot be
assured. Fit testing is available where respirators are sold;
and
• thoroughly wash hands and face after cleaning any area or
objects (e.g., clothing, dishes, etc.) contaminated by
rodent droppings.

5. Camping or outdoor activities can expose people to rodents
and their droppings. Avoid playing on hands and knees or
camping in grass or other areas where there is evidence of
rodents such as tunnels, nests, dead mice, feces, etc. Do not
stay in cabins that have obvious signs of rodent activity (e.g.,
droppings or chewing damage) unless they are properly
cleaned (See 4 above). Store food in rodent-proof containers.
Handle firewood with care since deer mice frequently live in
or around woodpiles.

6. Store-bought pets such as gerbils, mice, rats and others are
safe. Parents should warn children not to play with wild (live
or dead) rodents, or their nests.

7. If you have flu-like symptoms three days to six weeks
following an exposure to rodents, you should contact a
doctor immediately. Advise your doctor of the possible
exposure. The diagnosis of hantavirus infection is made on
the basis of symptoms and blood tests.

For more information:
Contact your local public health office in your Regional
Health Authority. If you do not know your Regional
Health Authority contact Health Links at 788-8200 or
1-888-315-9257. For work-related issues contact Workplace
Safety and Health at 945-6848.
Web site: http://www.gov.mb.ca/health/publichealth/

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