



Hantavirus

CHAPTER CONTENT

1. [Case Definition](#)
2. [Diagnosis](#)
3. [Reporting](#)
4. [Overview](#)
5. [Public Health Measures](#)
6. [Education](#)
7. [Epidemiology](#)
8. [References](#)

1. CASE DEFINITION

Confirmed Case

Clinical illness* with laboratory confirmation of infection:

- Detection of hantavirus-specific IgM antibodies
OR
- Seroconversion or significant difference in hantavirus-specific IgG antibody titres taken 7-10 days apart
OR
- Detection of hantavirus-specific nucleic acid (ex. PCR) in an appropriate clinical specimen (e.g., blood)
OR
- Detection of hantavirus antigen by immunostaining (pre or post-mortem) in an appropriate specimen (e.g., blood, lung, kidney, or spleen tissue).

*Clinical illness:

- A febrile illness (temperature > 38.3 °C oral) requiring supplemental oxygen **AND**
- Bilateral diffuse infiltrates (may resemble acute respiratory distress syndrome [ARDS])
AND
- Develops within 72 hours of hospitalization in a previously healthy person **OR**
- Unexplained respiratory illness resulting in death with an autopsy examination demonstrating non-cardiogenic pulmonary oedema without an identifiable specific cause of death.



Probable Case

- A person who presents with a febrile illness (Above 38.3C oral) with an acute respiratory distress syndrome requiring supplemental oxygen AND bilateral diffuse infiltrates developed within 72hrs of hospitalization in a previously healthy person ([WHO, 2022](#)).
- Unexplained illness resulting in death plus an autopsy examination demonstrating noncardiogenic pulmonary oedema without an identifiable specific cause of death ([WHO, 2022](#)).

2. DIAGNOSIS

- If clinical symptoms warrant and there is a documented or suspected exposure, samples of serum and/or tissue (if present) are sent for confirmation to the National Microbiology Laboratory (Winnipeg) for antibody testing by ELISA (serum) and PCR on tissue. A clinical history form is completed by the requesting physician to provide documentation.
- For more information, refer to the [Alberta Provincial Laboratory Guide to Services](#)

Note: As of 2022 there have been no reported cases of Hantavirus in the NWT.

3. REPORTING

All HCPs must follow the NWT [Public Health Act](#). Measures for contact tracing and legislative requirements are laid out within the [Reportable Disease Control Regulations](#) and reporting timelines are found in the [Disease Surveillance Regulations](#).

Note: the only acceptable methods of reporting to the OCPHO are outlined below. Information provided outside of these methods will not be considered reported unless otherwise stated by a CPHO delegate.

Health Care Professionals

For **Part 1** Call immediately and written report within 24 hours

- Confirmed and probable cases are to be reported **immediately** after diagnosis is made or opinion is formed to the Office of the Chief Public Health Officer (OCPHO) by telephone (867) 920- 8646, **AND**
- Within **24 hours** complete and fax the following to OCPHO at 867-873-0442
 - [Communicable Disease Report Form](#)
- If there are any updates regarding the case or contacts the appropriate form will need to be resent with the additional information
- **Immediately** report all outbreaks or suspect outbreaks by telephone (867)-920-8646 to the OCPHO

Laboratories

- Report all positive results to the OCPHO by fax (867) 873-0442 **immediately**.

4. OVERVIEW



Causative Agent

The virus is normally found only in rodents, like rats and mice and is more in common deer mice. Small populations of deer mice have been identified in the South Slave region of the GNWT.



Clinical Presentation

Hantavirus Pulmonary Syndrome (HPS) is a respiratory illness associated with the inhalation of aerosolized rodent excreta (urine and feces) contaminated by hantavirus particles and contact with rodent saliva. Upon inhalation of hantavirus contaminated particles, an extensive infection of pulmonary endothelial cells occurs and a viraemic phase is initiated. The average case fatality for HPS is 40%.

Following the incubation period, individuals typically present with very non-specific symptoms followed by a relatively short febrile prodrome lasting 3-5 days. Fever, chills, myalgia as well as malaise, headaches, and gastrointestinal illness are common symptoms. Five days after the onset of initial symptoms cough, shortness of breath, dizziness, sweats, and arthralgia may develop. Pulmonary oedema and deterioration of cardiopulmonary phase begins, the disease progresses rapidly, necessitating hospitalization and often ventilation. The infection may be fatal.

Transmission

Hantavirus is primarily transmitted through inhalation of aerosolized rodent excreta (urine or feces) contaminated by hantavirus particles. When contaminated dried materials are disturbed, they may be inhaled. Rarely they are introduced into broken skin, conjunctiva, or ingested through contaminated food or water. Infection may also occur from rodent bites. There has been no evidence of person to person spread of virus species found in North America or transmission from pets or livestock to humans.

Infected rodents may shed the virus in urine, feces, and saliva for many weeks, months, or for a lifetime. The greatest quantity of virus shed is approximately three to eight weeks after infection. Transmission from rodent to rodent is believed to be through physical contact.

Incubation Period

Approximately two weeks. Ranging from a few days to six weeks.

Clinical Guidance

- For patient-specific clinical management consult your local healthcare professional, paediatrician, and/or infectious disease specialist.

5. PUBLIC HEALTH MEASURES

Key Investigation

- History of relevant exposure, including exposure to mice, their saliva, and their excrement (feces and urine); and in particular:
 - Occupational exposure (e.g. outdoor worker or farm)
 - Exposure through camping, hiking, etc.
 - Living in a rural setting and/or



- Cleaning or working in mouse infested areas.

Management of Cases

- Consultation with an infectious diseases physician for investigation and management is recommended.
- Isolation precautions are not required, as person to person transmission has not been documented.

Management of Contacts

- Symptomatic and asymptomatic contacts should be investigated if a common source is suspected.

Prevention

- Prevent mice from entering homes by using steel wool, metal roof flashing, or cement to cover all openings from the outside.
- Use mouse proof storage containers for food, pet and animal food, grain, and garbage.
- Trap and dispose of mice in settings where humans reside.
 - Dispose of dead mice, mice droppings, and nests using plastic or rubber gloves.
 - Wet carcasses, nests, and/or droppings with a disinfectant such as dilute bleach (1 part bleach and 10 parts water) or household disinfectant.
 - Allow 10 minutes for disinfectant to act.
 - Place article in double bags or burn them.
- Discourage rodents from living around homes by:
 - Keeping grass short.
 - Placing wood piles 100 feet or more from the home and raising them at least 12 inches from the ground.
 - Removing abandoned vehicles, discarded tires and old, unused buildings (which may serve as nesting sites) from the property.
- Camping or outdoor activities can expose individuals to mice and their droppings. Avoid direct contact with areas where there is evidence of rodents (e.g., tunnels, nest, rodent feces).
- Educate the public about cleaning areas contaminated by mouse nests and mouse urine, feces, and saliva.
 - Ventilate the area by opening windows and doors for 30 minutes before and after disinfecting.
 - Water down the area with disinfectant such as dilute bleach (1 part bleach and 10 parts water).
 - If area is carpeted, use a mixture of water, detergent, and other household disinfectant (e.g. Lysol) or commercially steam clean area.



- Remove droppings by damp mopping, preferably twice. Mouse droppings should not be removed by sweeping or vacuuming.
- Wear full length clothing to avoid skin contamination.
- Use gloves to handle soiled clothes.
- Wash dirty laundry with hot water and detergent, and dry thoroughly.
- If dust generation cannot be avoided seek professional help.

6. PUBLIC & HEALTH PROFESSIONAL EDUCATION

For more information about Hantavirus:

- The Government of Canada: [Canada/Health/Diseases and Conditions/Hantaviruses](#)
- Centers for Disease Control and Prevention: CDC/ [Hantavirus](#)
- World Health Organization: WHO/ Hantavirus Outbreak Toolbox.

7. EPIDEMIOLOGY

- For more information on the epidemiology of Hantavirus in the Northwest Territories (NWT) see: [Epidemiological Summary of Communicable Diseases HSS Professionals](#)

8. REFERENCES

1. Centers for Disease Control and Prevention (CDC). 2021. Hantavirus. [CDC - Hantavirus](#)
2. Government of Alberta. 2021. Alberta public health disease management guidelines: Hantavirus. [Alberta public health disease management guidelines : hantavirus - Open Government](#)
3. Government of Canada. 2015. Hantaviruses. [Hantaviruses - Canada.ca](#)
4. World Health Organization (WHO). 2022. Hantavirus outbreak toolbox. [Hantavirus Outbreak Toolbox \(who.int\)](#)