

HANTAVIRUS PULMONARY SYNDROME

Disease Overview

Hantaviruses have more than 25 distinct viral species, each associated primarily with a rodent species. Depending on the hantavirus species, two syndromes can occur – hantavirus pulmonary syndrome and hemorrhagic fever with renal syndrome. In Canada, the majority of hantavirus pulmonary syndrome cases occur in the western provinces of British Columbia, Alberta, Saskatchewan and Manitoba. Only one case has been documented in eastern Canada (Québec). The primary cause of the illness in North America is the Sin Nombre virus and Sin Nombre virus-infected deer mice have been identified across the country.

For more information see CCDR Hantavirus pulmonary syndrome in Canada: An overview of clinical features, diagnostics, epidemiology and prevention.

Symptoms

There are two similar syndromes

Hantavirus pulmonary syndrome (North and South America) is characterized by fatigue, fever, chills, muscle aches and joint pain, headaches, nausea vomiting, dizziness, abdominal pain, coughing, followed by abrupt onset of pulmonary distress. Illness can progress rapidly. Sin Nombre and other viruses are in North and South America. The case fatality rate is 35-50%.

Hemorrhagic fever with renal syndrome (Europe and Asia) is characterized by acute onset of fever, back pain, varying degrees of hemorrhagic manifestations and renal involvement. Severe illness is caused by Hantaan (in Asia), Seoul and Dobrava (in the Balkans) viruses.

Reservoir

Each hantavirus species is generally associated with a rodent (for example rat or mice) species. In North America the major reservoir of Sin Nombre virus is the deer mouse, although other rodent carriers have been identified.

Mode of Transmission

Rodents shed virus in their urine, feces and saliva. Presumed route of infection is through aerosol transmission or breathing in tiny particles of rodent waste that are infected with the virus. This can occur in closed, poorly ventilated buildings when rodent waste is stirred into the air such as through vacuuming or sweeping.

Infection can also occur when people's broken skin or mucous membranes touch objects or eat food contaminated with the urine, droppings or saliva of infected rodents. While rare, a bite from an infected rodent can also result in exposure to the virus.

Incubation Period

From a few days to nearly 2 months.

Period of Communicability

Not normally person to person in North America.

Risk Factors

Increased risk for persons acquiring and/or severe illness:

- Rodent infestations are a risk for hantavirus exposure.
- Contact with rodents as part of occupation or recreational activity such as homeowners, cottagers, campers, farmers, ranchers, and hunters.
- Living or travelling in areas of the world where hantavirus is present
- Laboratory workers

Surveillance Case Definition

Hantavirus Pulmonary Syndrome confirmed case is clinical illness (characterized by a febrile illness (temperature > 38.3°C (101°F) oral) requiring supplemental oxygen, and bilateral diffuse infiltrates (may resemble acute respiratory distress syndrome) and develops within 72 hours of hospitalization in a previously healthy person OR an unexplained illness resulting in death with an autopsy examination demonstrating noncardiogenic pulmonary edema without an identifiable specific cause of death) with laboratory confirmation of infection:

- Detection of IgM antibodies to hantavirus
OR
- Detection of a significant (e.g. fourfold or greater) increase in hantavirus-specific IgG
OR
- Detection of hantavirus RNA in an appropriate clinical specimen
OR
- Detection of hantavirus antigen by immunohistochemistry

Diagnosis and Laboratory Guidelines

The National Microbiology Laboratory conducts diagnostic testing for hantavirus infections in humans. For diagnosis one or more of the following diagnostic markers must be positive:

- presence of hantavirus-specific IgM or rising titers of IgG
- presence of hantavirus RNA by RT-PCR

Turnaround time is 14 days.

Reporting

Per Policy 2.2 Disease and Event notification to OCMOH and Disease and Event Reporting section

- Routine Surveillance (RDSS) for all confirmed cases

Case Management

Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period, mode of transmission and disease ecology
- Animal handling precautions.
- Properly clean and disinfect areas contaminated by rodent droppings.

- Prevent rodents from infesting the places where you live and work. Seal entry holes and use rodent traps.

Investigation

Trace source of contamination and prevent exposure to others. Ask case about their symptoms and onset date. Ask Cases about how they might have been exposed including travel, occupation and recreational handling of rodents or their droppings in the previous 6 weeks.

Exclusion/Social Distancing

Not applicable

Treatment

Hospitalization, adequate rehydration and appropriate antimicrobial agents.

Immunization

Not applicable

Contact Management

Education

Per case management. The disease does not normally spread person to person.

Investigation

Per case management

Exclusion/Social Distancing

Not applicable

Prophylaxis

Not applicable

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.