

Appendix A: Disease-Specific Chapters

Chapter: Hantavirus pulmonary syndrome

Revised January, 2012

Hantavirus pulmonary syndrome

- Communicable
 Virulent

Health Protection and Promotion Act: Ontario Regulation 559/91 – Specification of Reportable Diseases

1) Aetiologic Agent:	<p>Hantavirus is a virus in the family <i>Bunyaviridae</i>. More than 25 antigenically distinguishable viral species exist, each associated primarily with a single rodent species (1).</p> <p>The viruses associated with hantavirus pulmonary syndrome (HPS) in the Americas include the Sin Nombre Virus (SNV), a major cause of HPS in the USA, and Bayou virus, Black Creek Canal virus, and the New York virus sporadic causes in Louisiana, Florida and New York, respectively. In recent years, new hantaviruses, including Andes virus associated with an HPS - like syndrome, have been isolated in South America (2).</p>
2) Case Definition:	
Surveillance Case Definition	See Appendix B
Outbreak Case Definition	<p>The outbreak case definition varies with the outbreak under investigation. Consideration should be given to the following when establishing an outbreak case definition:</p> <ol style="list-style-type: none">1. Clinical, laboratory and/or epidemiological criteria2. The time frame for occurrence3. The geographic location(s) or place(s) where cases live or became ill/exposed4. Special attributes of cases (e.g. age, underlying conditions) and/or the aetiologic agent <p>Cases may be classified by levels of probability (i.e. confirmed, probable and/or suspect).</p>
3) Identification:	
Clinical Presentation	<p>Hantavirus pulmonary syndrome infection often presents as a “flu-like” illness, with fever, intense headache, myalgia, nausea and other gastrointestinal symptoms; this is followed by cough, shortness of breath, dizziness, sweats and arthralgia (usually within 5 days) and then pulmonary edema and deterioration of cardiopulmonary function may rapidly occur. The crude fatality rate is 40-50% (1).</p>
Diagnosis	See Appendix B

4) Epidemiology:

Occurrence	<p>The disease was first recognized in 1993 in Southwest USA (1). It was made a nationally notifiable disease in Canada in 2000 (2). Incidence appears to coincide with the distribution and population density of infected carrier rodents and their infection levels (1).</p> <p>There have been no confirmed cases of HPS reported in Ontario. Given the severity and rarity of Hantavirus infection, a single confirmed case constitutes an important public health issue.</p>
Reservoir	<p>The major reservoir in North America is the deer mouse, found primarily in rural and semi-rural areas, often in barns and old buildings (1).</p>
Modes of Transmission	<p>Infected rodents shed live virus in their saliva, feces and urine; transmission primarily occurs through inhalation of aerosolized rodent saliva, urine or feces; through the bites of infected rodents; and through direct contact of broken skin or mucous membrane with rodent excreta (2).</p>
Incubation Period	<p>Not completely defined, however most often it has been found to be approximately 2 weeks after exposure, with a range from a few days to 6 weeks (1).</p>
Period of Communicability	<p>No person to person spread documented in North America, however there have been reports of person to person spread of the Andes virus strain in an outbreak in Argentina (1, 2).</p>
Susceptibility and Resistance	<p>All persons without prior infection are presumed to be susceptible, however protection and duration of immunity from previous infection is unknown. Rural dwellers, cottagers and campers are most at risk in endemic areas (1). Also any indoor exposure in closed, poorly ventilated areas with viable rodent infestation increases susceptibility to infection.</p>

5) Reporting Requirements:

To local Board of Health	<p>Confirmed and suspected cases shall be reported to the medical officer of health by persons required to do so under the <i>Health Protection and Promotion Act</i>, R.S.O. 1990.</p>
To Public Health Division (PHD)	<p>Report only case classifications specified in the case definition to PHD using the integrated Public Health Information System (iPHIS), or any other method specified by the Ministry within one (1) business day of receipt of initial notification as per <i>iPHIS Bulletin Number 17: Timely Entry of Cases</i> (3).</p> <p>The minimum data elements to be reported for each case is specified in the following:</p> <ul style="list-style-type: none">• <i>Ontario Regulation 569 (Reports)</i> under the Health

	<p>Protection and Promotion Act (HPPA)</p> <ul style="list-style-type: none"> • The disease-specific User Guides published by the Ministry, and • Bulletins and directives issued by the Ministry.
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6) Prevention and Control Measures:

Personal Prevention Measures	<p>Rodent control in and around the home is the primary strategy for preventing hantavirus infection:</p> <ul style="list-style-type: none"> • Eliminate food sources available to rodents such as storing food meant for humans and animals in a manner that would protect it from rodents • Limit possible nesting sites, seal holes and other possible entrances for rodents and use “snap traps” and rodenticides • Do not sweep or vacuum rodent contaminated areas; use a wet mop or towel moistened with disinfectant. Disinfect rodent contaminated areas by spraying a disinfectant solution, e.g. diluted bleach (1:10) • Wear gloves when cleaning rodent contaminated areas and perform hand hygiene after cleaning • Avoid inhalation of dust by using approved respirators when cleaning previously unoccupied areas. • Avoid wild rodents and direct contact with areas where there is evidence of rodents
Infection Prevention and Control Strategies	If hospitalized routine practices are recommended (2).
Management of Cases	<p>Investigate cases of to determine the source of infection. Refer to Section 5: <i>Reporting Requirements</i> above for relevant data to be collected during case investigation. The following disease-specific information should also be obtained during case management:</p> <ul style="list-style-type: none"> • Symptoms and date of symptom onset • Exposure history including travel and occupational history involving handling of rodents in the previous 6 weeks <p>Treatment for respiratory symptoms is under the direction of the attending health care provider. No specific treatment or cure.</p> <p>Provide education about the illness and how to prevent exposure.</p>
Management of Contacts	Not applicable unless exposed to same source, then as above.
Management of Outbreaks	<p>An outbreak is defined as two or more cases linked in place and time.</p> <p>Provide public health management of outbreaks or clusters in order to identify the source of illness and stop the outbreak. Outbreak management should focus on: (1)</p> <ul style="list-style-type: none"> • Rodent control • Public education about rodent avoidance and control

	<ul style="list-style-type: none"> • Surveillance for hantavirus infection in wild rodents <p>As per this Protocol, outbreak management shall comprise of, but not be limited to the following general steps:</p> <ul style="list-style-type: none"> • Confirm diagnosis and verify the outbreak; • Establish an outbreak team; • Develop an outbreak case definition; • Implement prevention and control measures; • Implement and tailor communication and notification plans depending on the scope of the outbreak; • Conduct epidemiological analysis on data collected; • Conduct environmental inspections of implicated premise where applicable; • Coordinate and collect appropriate clinical specimens where applicable; • Prepare a written report, and • Declare the outbreak over in collaboration with the outbreak team.
<p>7) References</p>	<p>(1) Heymann D, editor. Control of communicable diseases manual. 18th ed. Washington: American Public Health Association; 2004.</p> <p>(2) Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red book: 2006 report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006. Section 3, Summaries of infectious diseases; p. 318-21.</p> <p>(3) Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. 2012 January;14.</p>
<p>8) Additional Resources</p>	<p>Drebot MA, Artsob H, Werker D. Hantavirus pulmonary syndrome in Canada, 1989-1999. Can Commun Dis Rep. 2000 Apr 15;26(8):65-9. Available from: http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/00pdf/cdr2608.pdf.</p> <p>Gregg MB, editor. Field epidemiology. 2nd ed. New York: Oxford University Press; 2002.</p> <p><i>Health Protection and Promotion Act</i>, R.S.O. 1990, c. H.7. Available from http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.</p>

