



Communicable Disease Case Reporting and Investigation Protocol **HANTAVIRUS INFECTION**

I. IDENTIFICATION AND DEFINITION OF CASES

- A. **Clinical Description:** Multiple hantaviruses are pathogenic for humans. There are two general types of clinical syndromes caused by hantavirus infection depending on the infecting virus—hantavirus pulmonary syndrome (HPS) and hemorrhagic fever with renal syndrome (HFRS).
- **Hantavirus pulmonary syndrome (HPS)** is a febrile illness characterized by bilateral interstitial pulmonary infiltrates and respiratory compromise usually requiring supplemental oxygen and clinically resembling acute respiratory disease syndrome (ARDS). The typical prodrome consists of fever, chills, myalgia, headache, and gastrointestinal symptoms. Typical clinical laboratory findings include hemoconcentration, left shift in the white blood cell count, neutrophilic leukocytosis, thrombocytopenia, and circulating immunoblasts.
 - **Hemorrhagic fever with renal syndrome (HFRS)** is characterized by acute onset of fever, malaise, back and abdominal pain, often with accompanying nausea, vomiting, and petechiae. Deverescence may be accompanied by severe hypotension, oliguria, and renal failure.
- B. **Laboratory Criteria:** Laboratory-confirmed hantavirus infections are defined as the detection of:
- Hantavirus-specific immunoglobulin M or rising titers of hantavirus-specific immunoglobulin G, or
 - Hantavirus-specific ribonucleic acid sequence by polymerase chain reaction in clinical specimens, or
 - Hantavirus antigen by immunohistochemistry in lung biopsy or autopsy tissues.

Specimens positive for hantavirus should be forwarded to the Centers for Disease Control and Prevention (CDC) for confirmation and hantavirus identification via the Wisconsin State Laboratory of Hygiene (WSLH). Contact the Bureau of Communicable Diseases (BCD) to obtain approval prior to submitting specimens to WSLH.

- C. **Wisconsin Surveillance Case Definition:** Confirmed: A clinically compatible illness that is laboratory confirmed.

II. REPORTING

- A. **Wisconsin Notifiable Disease Category I – Methods for Reporting:** This disease shall be reported **IMMEDIATELY BY TELEPHONE** to the patient's local health officer or to the local health officer's designee upon identification of a case or suspected case, per Wis. Admin. Code § [DHS 145.04 \(3\) \(a\)](#). In addition to the immediate report, complete and fax, mail or electronically report an Acute and Communicable Disease Case Report (DHS [F-44151](#)) to the address on the form, or enter the data into the Wisconsin Electronic Disease Surveillance System, within 24 hours.
- B. **Responsibility for Reporting:** According to Wis. Admin. Code § [DHS 145.04\(1\)](#), persons licensed under Wis. Stat. ch. [441](#) or [448](#), laboratories, health care facilities, teachers, principals, or nurses serving a school or day care center, and any person who knows or suspects that a person has a communicable disease identified in [Appendix A](#).
- C. **Clinical Criteria for Reporting:**
1. HPS: A febrile illness (i.e., temperature >101.0° F [38.3° C]) corroborated by bilateral diffuse interstitial edema or a clinical diagnosis of acute respiratory distress syndrome (ARDS) or radiographic evidence of noncardiogenic pulmonary edema, or unexplained respiratory illness resulting in death, and occurring in a previously healthy person, **OR** an unexplained respiratory illness resulting in death, with an autopsy examination demonstrating noncardiogenic pulmonary edema without an identifiable cause.
 2. HFRS: An acute febrile illness with sudden onset of abdominal or lower back pain and hypotension with proteinuria, thrombocytopenia, leukocytosis, hemoconcentration, oliguria, and elevated BUN in the absence of an alternate diagnosis. The presence of petechiae and a history of travel to Europe or Asia or contact with domesticated or wild rodents or their environment within eight weeks of onset should heighten the index of suspicion for HFRS.

- D. **Laboratory Criteria for Reporting:** Laboratory evidence of infection by detection of hantavirus-specific immunoglobulin M, hantavirus-specific immunoglobulin G, hantavirus-specific ribonucleic acid sequence by polymerase chain reaction in clinical specimens, or detection of hantavirus antigen by immunohistochemistry.

III. CASE INVESTIGATION

- A. **Responsibility for case investigation:** It is the responsibility of the local health department (LHD) to investigate or arrange for investigation of suspected or confirmed cases as soon as is reasonably possible. A case investigation may include information collected by phone, in person, in writing, or through review of medical records or communicable disease report forms, as necessary and appropriate.

An environmental investigation may be necessary to inspect for rodent infestations.

B. **Required Documentation:**

1. Complete the WEDSS disease incident investigation report, including appropriate, disease-specific tabs (Hantavirus infection or Hantavirus-Non-HPS, as appropriate).
2. Complete CDC Hantavirus Disease Case Report Form: https://www.cdc.gov/hantavirus/pdf/HPS_Case-report-form.pdf
3. Upon completion of investigation, set WEDSS disease incident process status to “Sent to State.”

C. **Additional Investigation Responsibilities:**

1. Contact and work with BCD staff on the investigation.
2. Ascertain all contact with rodents or rodent-contaminated areas during the eight weeks preceding onset. Obtain detailed travel history. Environmental assessment may be indicated.
3. Coordinate submission of the positive patient specimen to CDC via WSLH for Hantavirus species identification.

IV. PUBLIC HEALTH INTERVENTIONS AND PREVENTION MEASURES

- A. In accordance with Wis. Admin. Code § [DHS 145.05](#), local public health agencies should follow the methods of control recommended in the current editions of *Control of Communicable Diseases Manual*, edited by David L. Heymann, published by the American Public Health Association, and the American Academy of Pediatrics’ *Red Book: Report of the Committee on Infectious Diseases*, unless otherwise specified by the state epidemiologist.
- B. Educate the public about minimizing risk when entering or during cleanup of rodent infested areas (see the Division of Public Health (DPH) fact sheet at <https://www.dhs.wisconsin.gov/publications/p42053a.pdf>) and about safe handling of pet rodents (<https://www.cdc.gov/healthypets/pets/small-mammals/petrodents.html>).

V. CONTACTS FOR CONSULTATION

- A. Local health departments and tribal health agencies:
<https://www.dhs.wisconsin.gov/lh-depts/index.htm>
- B. Bureau of Communicable Diseases, Communicable Diseases Epidemiology Section: 608-267-9003
- C. Wisconsin State Laboratory of Hygiene: 800-862-1013

VI. RELATED REFERENCES

- A. Heymann DL, ed. Hantaviral Diseases. In: *Control of Communicable Diseases Manual*. 20th ed. Washington, DC: American Public Health Association, 2015: 245-249.
- B. Pickering LK, ed. Hantavirus Pulmonary Syndrome In: *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2015: 376-379.
- C. Pickering LK, ed. Hemorrhagic Fevers Caused by Bunyaviruses. In: *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2015: 383-386.

- D. Centers for Disease Control and Prevention website: <https://www.cdc.gov/hantavirus/index.html>
- E. DPH Hantavirus - HPS Fact Sheet, P-42053a: <https://www.dhs.wisconsin.gov/library/p-42053a.htm>
- F. DPH Hantavirus – HFRS Fact Sheet, P-42053: <https://www.dhs.wisconsin.gov/library/P-42053.htm>
- G. CDC guidance: Cleaning up After Rodents: <https://www.cdc.gov/rodents/cleaning/index.html>