

Hantavirus testing guide for Utah clinicians

Hantaviruses are spread by rodents. In the United States, Sin Nombre virus (SNV) is responsible for most cases of hantavirus infection, which is spread by the deer mouse. Rodents shed the virus in their urine, droppings, and saliva, and airborne transmission to humans is most common. Nearly all (97%) hantavirus infections result in hantavirus pulmonary syndrome (HPS). HPS typically progresses to "[late](#)" symptoms after 4–10 days, which involve shortness of breath and the lungs filling with fluid. Hantavirus is rare, with an average of 1–2 cases identified in the state of Utah each year. It is recommended to rule out more common causes of respiratory symptoms and run diagnostic tests such as blood work and a chest x-ray to determine the likelihood of hantavirus before you request hantavirus testing.

Hantavirus is a reportable disease in Utah. If a patient has symptoms and an exposure history which suggests hantavirus, consult the [hantavirus disease plan](#) to verify the patient meets clinical criteria for reporting. Contact the Utah Department of Health and Human Services (DHHS) One Health epidemiologist to request the coordination of hantavirus diagnostic testing as described below.

Hantavirus testing is currently not available at the Utah Public Health Laboratory (UPHL), and must be coordinated with DHHS for specimens to be forwarded to the Centers for Disease Control and Prevention (CDC) for testing. **CDC does NOT accept any specimens without prior consultation and pre-approval.** The responsible healthcare provider needs to provide clinical and historical information about the case as listed below to enable the DHHS One Health epidemiologist to get approval from the CDC.

Required information to obtain CDC approval for testing:

- Patient name: _____
- Date of birth: _____
- Sex: _____
- Race/ethnicity: _____
- County of residence: _____

- Risk history
 - What is the patient's occupation? _____
 - Did the patient have a history of rodent exposure within 8 weeks of illness onset? _____
 - If yes, describe the type of exposure (rodent infestation in the home, cleaning, working, recreational activity such as camping or hiking, other):

 - What was the location of exposure? (city, county, state)

 - Date of exposure: _____
- Did the patient report any travel history? If so, include locations and dates of travel:

- What was the patient's symptom onset date? _____
- Did the patient receive treatment? _____
- If yes, list the type and date of treatment: _____
- Describe a brief clinical summary including progression of symptoms and baseline health status:

- Does the patient have:
 - Fever? _____
 - Thrombocytopenia? _____
 - Elevated hematocrit? _____
 - Elevated creatinine? _____
 - Was the patient hospitalized? _____
 - Date(s) of hospitalization? _____
 - Supplemental oxygen required? _____
 - Was the patient intubated? _____
 - Was the patient on ECMO? _____
 - Chest x-ray with unexplained bilateral interstitial infiltrates or suggestive of ARDS? _____
 - What was the outcome of illness? (recovered, discharged, etc.) _____
- Ordering provider name: _____
- Ordering provider phone: _____
- Ordering provider fax: _____
- Ordering provider email: _____

How do I request a test?

- 1) Provide the above clinical information and exposure history to DHHS so the test request can be sent to CDC for pre-approval.
 - a. Send the DHHS One Health epidemiologist a patient summary that includes the information listed above by email (onehealth@utah.gov) or secure fax (801-538-9923), or
 - b. Call the One Health epidemiologist (801-538-6191) to discuss the case.
- 2) Send the specimen and completed [test request form](#) to UPHL.

The One Health epidemiologist will share this information with CDC to request testing approval, and if the case appears to meet exposure history and clinical presentation for hantavirus, the specimen originally sent to UPHL will be shipped to CDC for testing. Only specimens that meet clinical or risk history requirements will be approved for testing. **Samples with incomplete information will result in testing delays and delays in results.** Turnaround time for hantavirus test results ranges from 1–3 weeks.

Summary of hantavirus testing process in Utah:

1. Provider sends clinical summary to the DHHS One Health epidemiologist by email (onehealth@utah.gov) or secure fax (801-538-9923), or calls (801-538-6191) to provide necessary patient information (see list above).
2. Healthcare team sends the specimen and completed [Test Request Form](#) to UPHL.
3. DHHS One Health epidemiologist requests approval for testing from CDC.
4. If approved, UPHL will send the specimen to CDC.
5. CDC will report results to the DHHS One Health epidemiologist and the responsible provider (as long as the provider's contact information has been provided on the test request form) by email.

Guidelines for submitting specimens

Once collected, the specimen can be shipped to the [Utah Public Health Laboratory](#) where it will then be forwarded on to CDC's Viral Special Pathogens Diagnostic Laboratory:

UTAH PUBLIC HEALTH LABORATORY
4431 SOUTH 2700 WEST
TAYLORSVILLE, UTAH 84129
TELEPHONE: (801) 965-2400
FAX: (801) 536-0473

Label all samples with the following information:

- Patient's name or ID number
- Specimen ID number
- Date of collection

All specimens *must be accompanied by* the [infectious disease test request form](#).

For serologic testing, submit:

- **Preferred:** Serum (red top tube or serum separator)
- Whole blood (purple, green, or blue top tube) can be submitted, but specimens are only accepted up to 7 days after collection when refrigerated, which may not allow enough time for test approval and shipment to CDC.
- Minimum sample volume: 4 mL
- Ship sample frozen on ice packs or refrigerated

For PCR/virus isolation, submit:

- Preferred: whole blood (purple, yellow, or blue top tube), fresh frozen tissue
- Serum can also be used if it is the only sample available
- Minimum sample volume: 4 mL
- Fresh frozen tissues should be at least 1 cm³, except for biopsies
- Ship sample frozen on dry ice in a plastic tube. Do not freeze glass tubes.

For immunohistochemistry, submit:

- Formalin-fixed or paraffin-embedded tissues may be submitted:
 - Preferred: lung, kidney, liver, spleen
 - Other tissues can be submitted if available
- Paraffin blocks are preferred, particularly if death was not recent
- Ship paraffin blocks or formalin-fixed tissue at room temperature. Do not freeze.

An autopsy or surgical report must accompany the specimen. (Source: <https://www.cdc.gov/ncezid/dhcpp/vspb/pdf/specimen-submission-508.pdf>)

For more information on specimen submission requirements, see:

https://www.cdc.gov/hantavirus/health-care-workers/specimen-submission/protocol.html#anchor_1550761021

Hantavirus resources

CDC Hantavirus information: <https://www.cdc.gov/hantavirus/index.html>

DHHS Hantavirus resources: <https://epi.health.utah.gov/hantavirus/>

Utah DHHS contact information

Request the DHHS One Health epidemiologist

Email: onehealth@utah.gov

Phone: 801-538-6191

Secure Fax: 801-538-9923