



AZ Hantavirus Surveillance Updates

APIC | February 28, 2025

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Background



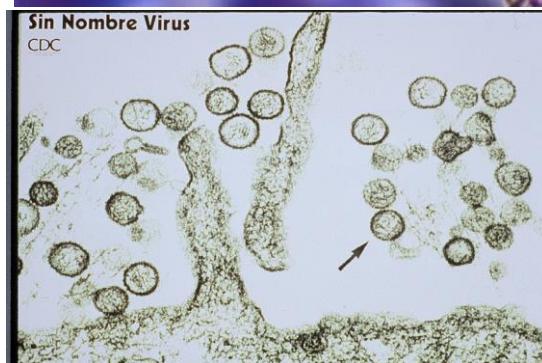
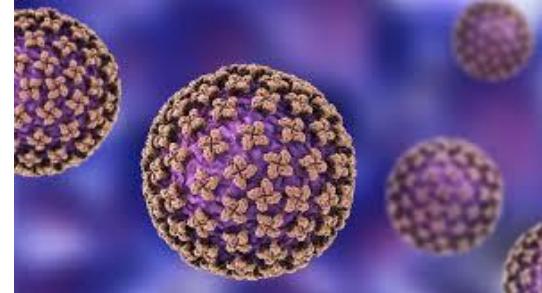
Background

- Hantaviruses are family of RNA viruses (30+ species)
- Named after the Hantan River in South Korea
- Animal reservoir: rodent
- Old World hantaviruses
 - Primarily in Europe and Asia (e.g., Hantaan, Puumala, Seoul viruses)
 - **Hemorrhagic fever with renal syndrome (HFRS)**
- New World hantaviruses
 - In the Americas
 - **Hantavirus pulmonary syndrome (HPS)**: first identified in the U.S. in 1993 in the Four Corners region caused by **Sin Nombre virus (SNV)**



Sin Nombre Virus

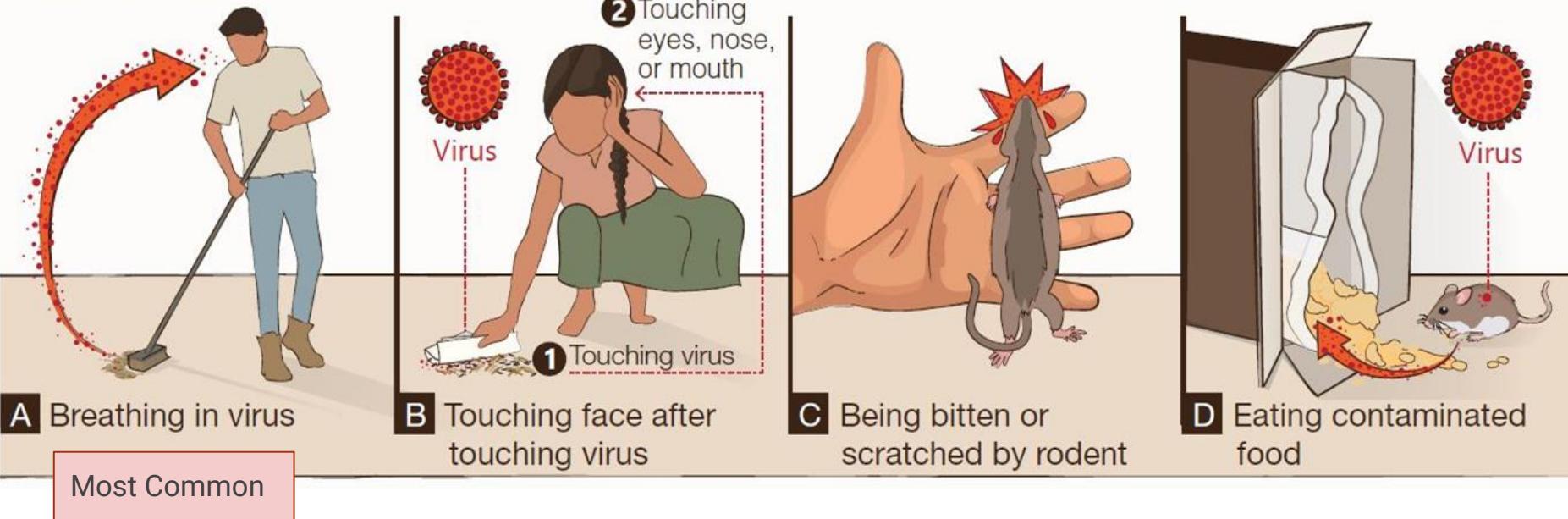
- Hantavirus disease in Arizona is caused by SNV
- SNV is spread by rodents, primarily the **deer mouse** (*Peromyscus maniculatus*)
- Transmission: contact with infected rodent's urine, feces, or saliva
- Primarily via inhaling contaminated air (e.g., after sweeping rodent urine/feces)
- Not spread person-to-person



Deer mouse or
*Peromyscus
maniculatus*



TRANSMISSION: A person can be infected by



Arizona Epidemiology



2023-2024 Increase

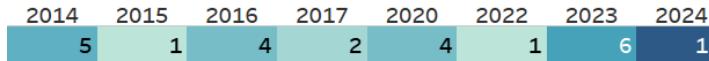
- 10-year avg = 2.3 cases
- Most cases occur in the late spring/early summer.
- Reasons uncertain but potentially precipitation.

2024:

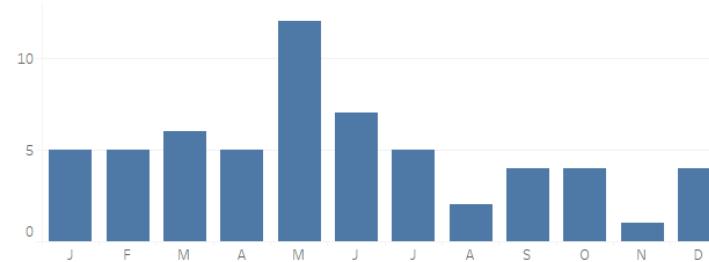
- Highest count since 2006
- 3/4 northern counties
- Pima County's first case since 1994 – second ever recorded.
- 7 had onset dates within 2.5 months of one another.
- 7 were tribal members
- 10 developed HPS
 - 4 died (40% case fatality rate)

AZ Hantavirus Cases

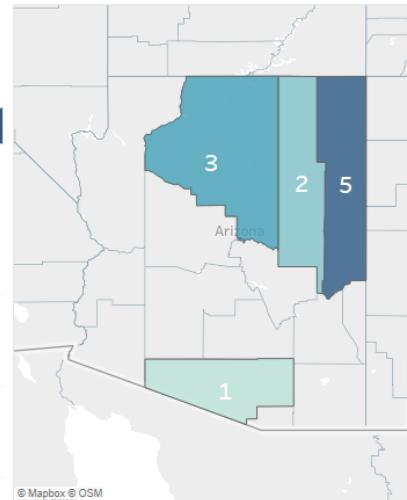
2014-2024 Confirmed Case Counts



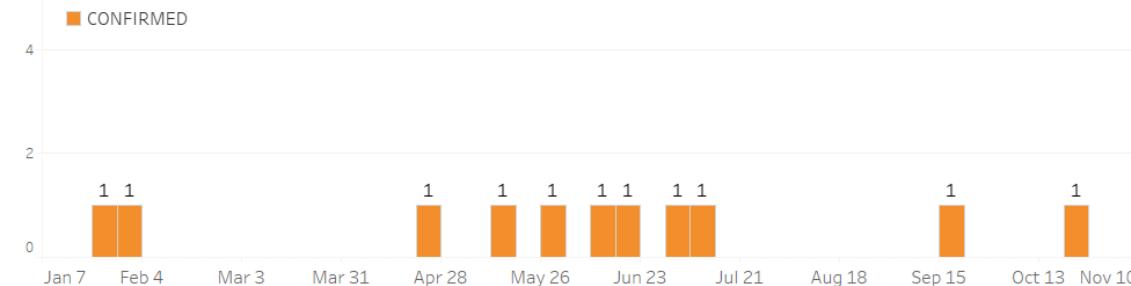
2006-2024 Aggregate Counts by Month of Onset



2024 Cases by County



2024 Cases by Onset Date



2024 Hantavirus Response

THE NAVAJO NATION
Office of the President



Press Room ▾ Administrative
The Record ▾ Contact H

Navajo Nation Department of Health issues Public Health Advisory for first Hantavirus case of 2024

Feb 22, 2024 | Statements and Releases

Navajo Nation press release, February 22

Posted on: July 12, 2024

Increase in Hantavirus Activity, Two Deaths Reported in Coconino County

Coconino County has seen an increase in hantavirus activity. Three hantavirus cases have been reported in the past 15 months, two of which have died (67% mortality rate). Previously, Coconino County's last reported hantavirus case occurred in 2016.

Arizona has also been experiencing an increase in hantavirus activity. From January 1 to July 1, 2024, seven human cases of Hantavirus Pulmonary



Coconino County press release, July 12

Arizona Department of Health Services <no-reply@azdhs.gov> Mon, Jul 8, 1:50 PM
to me ▾

Increased Hantavirus Activity in Arizona: Consider Hantavirus in your Differential

Arizona has been experiencing an increase in hantavirus activity. As of July 1st, seven human cases of Hantavirus Pulmonary Syndrome (HPS), including three deaths, from three counties have been reported for 2024. Arizona healthcare providers are strongly encouraged to:

ADHS HAN, July 8



ARIZONA DEPARTMENT OF HEALTH SERVICES
Health and Wellness for All Arizonans

Protect Yourself from Hantavirus Pulmonary Syndrome

At the Arizona Department of Health Services, we're dedicated to safeguarding and providing clear, credible, and timely health information. That's why we want to make sure you're aware of the increased cases of hantavirus in Arizona.

ADHS blog post, August 20



Clinical Management



Hantavirus Pulmonary Syndrome

Symptoms of hantavirus usually start to show **1 to 8 weeks** after contact with an infected rodent.

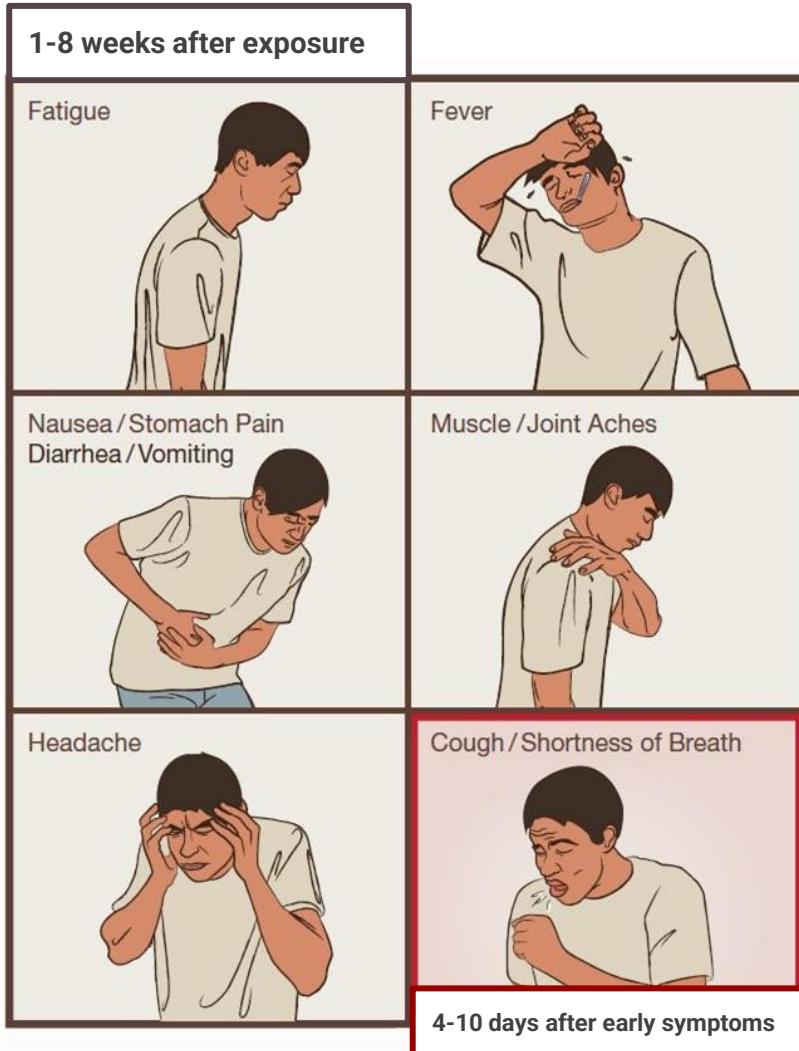
Early symptoms can include:

- **Fatigue, fever, muscle aches** (especially in the large muscle groups like the thighs, hips, back, and sometimes shoulders)
- About half of all HPS patients also experience: **headaches, dizziness, chills, abdominal problems** (like nausea, vomiting, diarrhea, and abdominal pain)

Late symptoms: **4-10 days after the initial phase** of illness and include **coughing and shortness of breath**. Patients might experience tightness in the chest, as the lungs fill with fluid.

HPS can be deadly. About 38% of people who develop respiratory symptoms may die from the disease.

Non-HPS hantavirus infection can also occur, with only non-specific symptoms and no cardiopulmonary/late symptoms



Five-Point Hanta Screening

- Developed in 2001 by the University of New Mexico
- **Only recommended in highly endemic locations** (like the Four Corner Area)
- Rapid method of presumptive HPS diagnosis using peripheral blood counts and smear morphology review
- During the cardiopulmonary symptoms only (if done too early than the score would be low; then serial screening is recommended, every 12 hr)
- It gives a score 1/5 to 5/5
 - 4/5 and 5/5 are positive
 - Lower needs repeating if clinically warranted
- Typical laboratory finding:
 - Increased hematocrit (*% of RBC by volume*)
 - Left shift in the white blood cell count
 - Neutrophilic leukocytosis with immature granulocytes
 - Thrombocytopenia (*low platelet count*)
 - Circulating immunoblasts (basophilic cytoplasm, prominent nucleoli and increased nuclear cytoplasmic ratio)

Koster, F. Foucar, K. Hjelle, B. et al; Rapid Presumptive Diagnosis of Hantavirus Cardiopulmonary Syndrome by Peripheral Blood Smear Review; American Journal of Clinical Pathology; 2001, volume 116; p 665 – 672

Treatment

HPS consultations for clinical care should be available at The University of New Mexico Health Sciences Center Physician Access Line Service, UNM PALS, at 505-272-2000 or 888-886-7257.

- There is no specific treatment for hantavirus infection.
- **Early intensive medical care is critical** because patients who have sudden acute disease can rapidly become severely sick and die.
- Patient management should include:
 - Monitoring and adjustment of cardiac function
 - Carefully administering fluids
 - Providing supplemental oxygen
 - Intubating and ventilating if needed

Initiating extracorporeal membrane oxygenation (**ECMO**) **at the earliest sign of decompensation** has an 80% survival rate in patients despite cardiopulmonary collapse. **Might require transfer** to a different hospital that can offer ECMO.

Without adequate treatment, most deaths occur in patients with HPS within 24 to 48 hours of the cardiopulmonary phase onset.

For more details refer to the [CDC Hantavirus Treatment page](#).



Testing

- Healthcare providers should test a person for hantavirus if they have compatible symptoms and have had contact with rodents.
- Hanta test types
 - IgM (most common)
 - Rising IgG titers in paired acute and convalescent samples
 - Immunohistochemistry (IHC) — mostly for post-mortem tissues
 - PCR
- IgM testing is commercially available (Quest, Mayo)
- Commercial testing is sensitive but specificity is low so confirmatory testing of IgM+ results at the Arizona State Public Health Laboratory (ASPHL) is suggested.
- Please do not send samples for hantavirus testing to ASPHL without prior approval from your local health jurisdiction.

Thank you!

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[ADHS Hantavirus Webpage](#)