

## MONTHLY SCIENTIFIC REVIEW ON ANDES VIRUS (HANTAVIRUS)

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### Situation at a glance

- Hantaviruses comprise a large group of zoonotic viruses primarily transmitted by wild rodents. Their characteristics vary across regions worldwide. Case fatality rates, which may be substantial, range from 0.4% to 60% depending on the specific virus and geographic area.
- An international health alert was issued on 2 May 2026 following notification to WHO of a cluster of severe respiratory syndromes aboard the Dutch cruise ship MV Hondius en route to Cape Verde.
  - The identified pathogen is a hantavirus, Andes virus (ANDV), confirmed by molecular testing on 6 May 2026. It is the only hantavirus for which human-to-human transmission has been documented in specific contexts.
  - ANRS Emerging Infectious Diseases activated a Level 1 Emergence Task Force on 7 May 2026. An initial research meeting involving all stakeholders (scientific experts, public health authorities, and policy decision-makers) was held on 11 May 2026.

## Scientific articles

This section presents relevant articles published on peer-reviewed scientific journals or pre-print platforms.

2025-09-14

### **High genomic stability of Andes virus following successive passage in vivo in Syrian hamsters.**

**Journal:** J Virol

**Authors:** Bryce M Warner, Jérémie Prévost, Nikesh Tailor, Yvon Deschambault, Angela Sloan, Julina Allarie, Levi Klassen, Kathy Frost, Stephanie Booth, Jonathan Audet, Geoff Soule, David Safronetz

ANDV strain CHI-7913 showed high genomic stability after 25 in vivo passages in Syrian hamsters, with minimal mutations and no overt disease, suggesting low selective pressure in this host.

[See details](#)

2021-06-22

### **Cryofixation of Inactivated Hantavirus-Infected Cells as a Method for Obtaining High-Quality Ultrastructural Preservation for Electron Microscopic Studies.**

**Journal:** Front Cell Infect Microbiol

**Authors:** Amar Parvate, Ranjan Sengupta, Evan P Williams, Yi Xue, Yong-Kyu Chu, Robert V Stahelin, Colleen B Jonsson

Hybrid method of aldehyde fixation and high-pressure freezing preserves hantavirus-infected cell ultrastructure, revealing endomembrane perturbations, suitable for tomographic studies.

[See details](#)

2020-11-24

## **Characterization of Oral Immunity in Cases and Close Household Contacts Exposed to Andes Orthohantavirus (ANDV).**

**Journal:** Front Cell Infect Microbiol

**Authors:** Constanza Martinez-Valdebenito, Camila Andaur, Jenniffer Angulo, Carolina Henriquez, Marcela Ferrés, Nicole Le Corre

This study investigates oral immunity in ANDV-infected cases, close household contacts, and healthy controls, revealing differences in salivary sIgA, cytokines (IFN $\gamma$ , IL12p70, IL8), and mucins (MUC7, MUC5B). Higher sIgA and distinct mucin profiles in contacts suggest potential protective roles, warranting further exploration.

[See details](#)

2021-11-03

## **Binding of the Andes Virus Nucleocapsid Protein to RhoGDI Induces the Release and Activation of the Permeability Factor RhoA.**

**Journal:** J Virol

**Authors:** Elena E Gorbunova, Erich R Mackow

Andes virus (ANDV) nucleocapsid protein (N) binds RhoGDI, releasing and activating RhoA, increasing pulmonary endothelial cell permeability. ANDV N sequesters RhoGDI, enhancing RhoA release from S34-phosphorylated RhoGDI, synergistically activating RhoA and permeability under hypoxia. Targeting PKC and PKA pathways may inhibit ANDV-induced edema in HPS.

[See details](#)

2020-09-29

## **Differential CD4 T Regulatory Cell Phenotype Induced by Andes Hantavirus Glycoprotein.**

**Journal:** Front Cell Infect Microbiol

**Authors:** Farides Saavedra, Jose L Garrido, Francisco Fuentes-Villalobos, Mario Calvo, Raúl Riquelme, María Luisa Rioseco, Carolina Chahín, Leonila Ferreira, Raymond Alvarez, Estefania Nova-Lamperti, Maria Ines Barria

This study characterizes memory CD4 Tregs in Andes hantavirus (ANDV) infection survivors, revealing a distinct phenotype with higher PD-1 expression and reduced Th1-like Tregs. ANDV-glycoprotein VLPs modulate Tregs, decreasing Th1-like and increasing Th2-like populations, suggesting a specific immune evasion mechanism.

[See details](#)

2021-06-22

## **Comparison of VSV Pseudovirus and Focus Reduction Neutralization Assays for Measurement of Anti- Neutralizing Antibodies in Patient Samples.**

**Journal:** Front Cell Infect Microbiol

**Authors:** Cecilia Vial, Annalis Whitaker, Jan Wilhelm, Jimena Ovalle, Ruth Perez, Francisca Valdivieso, Marcela Ferres, Constanza Martinez-Valdebenito, Philip Eisenhauer, Gregory J Mertz, Jay W Hooper, Jason W Botten, Pablo A Vial

This study compares VSV pseudovirus and FRNT assays for measuring anti-ANDV neutralizing antibodies, finding that the pseudovirus assay is more sensitive, requires less labor and sample materials, and can be conducted at BSL-2, making it a more practical alternative to the standard FRNT assay.

[See details](#)

2020-12-18

## **Hantavirus Infection Is Inhibited by Griffithsin in Cell Culture.**

**Journal:** Front Cell Infect Microbiol

**Authors:** Punya Shrivastava-Ranjan, Michael K Lo, Payel Chatterjee, Mike Flint, Stuart T Nichol, Joel M Montgomery, Barry R O'Keefe, Christina F Spiropoulou

Griffithsin (GRFT) and its trimeric variant 3mGRFT exhibit potent antiviral activity against Andes virus (ANDV) and Sin Nombre virus (SNV) in cell culture, inhibiting viral entry by targeting envelope glycoprotein function. 3mGRFT shows greater potency than GRFT, warranting further in vivo testing.

[See details](#)

2021-08-19

## **Identification of Novel Antiviral Compounds Targeting Entry of Hantaviruses.**

**Journal:** Viruses

**Authors:** Jennifer Mayor, Giulia Torriani, Olivier Engler, Sylvia Rothenberger

This study developed a fluorescence-based assay to screen 320 natural compounds for antivirals targeting entry of hemorrhagic fever viruses, identifying hits against HTNV, ANDV, EBOV, and LASV. Two compounds, emetine dihydrochloride and tetrandrine, were validated against HTNV, highlighting drug repurposing potential.

[See details](#)

2021-02-26

## **Differential pathogenesis between Andes virus strains CHI-7913 and Chile-9717869 in Syrian Hamsters.**

**Journal:** J Virol

**Authors:** Bryce M Warner, Angela Sloan, Yvon Deschambault, Sebastian Dowhanik, Kevin Tierney, Jonathan Audet, Guodong Liu, Derek R Stein, Oliver Lung, Cody Buchanan, Patrycja Sroga, Bryan D Griffin, Vinayakumar Siragam, Kathy L Frost, Stephanie Booth, Logan Banadyga, Greg Saturday, Dana Scott, Darwyn Kobasa, David Safronetz

ANDV strains Chile-9717869 and CHI-7913 show differential pathogenesis in Syrian hamsters. Despite high sequence similarity, CHI-7913 is non-lethal, exhibits reduced replication, and lower cytokine expression (IL-4, IL-6, IFN- $\gamma$ ), suggesting limited immune-mediated pathology.

[See details](#)

2024-11-27

## **Rio Mamore Hantavirus Endemicity, Peruvian Amazon, 2020.**

**Journal:** Emerg Infect Dis

**Authors:** Marta Piche-Ovares, Maria Paquita García, Andres Moreira-Soto, Maribel Dana Figueroa-Romero, Nancy Susy Merino-Sarmiento, Adolfo Ismael Marcelo-Ñique, Edward Málaga-Trillo, Dora Esther Valencia Manosalva, Miladi Gatty-Nogueira, César Augusto Cabezas Sanchez, Jan Felix Drexler

This study identified Rio Mamore hantavirus in the Peruvian Amazon, with phylogenetic analysis suggesting endemicity. Low incidence (0.5% in Loreto, 1.7% across three departments) and nonspecific reactivity in some samples were noted, emphasizing the need for improved diagnostics and surveillance in Latin America.

[See details](#)

2020-07-21

## **Mother-to-Child Transmission of Andes Virus through Breast Milk, Chile.**

**Journal:** Emerg Infect Dis

**Authors:** Marcela Ferrés, Constanza Martínez-Valdebenito, Jenniffer Angulo, Carolina Henríquez, Jorge Vera-Otárola, María José Vergara, Javier Pérez, Jorge Fernández, Viviana Sotomayor, María Francisca Valdés, Diego González-Candia, Nicole D Tischler, Cecilia Vial, Pablo Vial, Gregory Mertz, Nicole Le Corre

Andes virus (ANDV) is the only hantavirus transmitted between humans through close contact. We detected the genome and proteins of ANDV in breast milk cells from an infected mother in Chile who transmitted the virus to her child, suggesting gastrointestinal infection through breast milk as a route of ANDV person-to-person transmission.

[See details](#)

2020-12-18

## **The Andes Orthohantavirus NSs Protein Antagonizes the Type I Interferon Response by Inhibiting MAVS Signaling.**

**Journal:** J Virol

**Authors:** Jorge Vera-Otarola, Loretto Solis, Fernando Lowy, Valeria Olguín, Jenniffer Angulo, Karla Pino, Nicole D Tischler, Carola Otth, Paula Padula, Marcelo López-Lastra

ANDV-NSs protein, expressed in infected hamster lungs, antagonizes type I IFN response by inhibiting MAVS signaling, reducing MAVS ubiquitination without disrupting MAVS-TBK1 interaction, revealing a novel immune evasion mechanism.

[See details](#)

2022-02-11

## **Broad and potently neutralizing monoclonal antibodies isolated from human survivors of New World hantavirus infection.**

**Journal:** Cell Rep

**Authors:** Taylor B Engdahl, Natalia A Kuzmina, Adam J Ronk, Chad E Mire, Matthew A Hyde, Nurgun Kose, Matthew D Josleyn, Rachel E Sutton, Apoorva Mehta, Rachael M Wolters, Nicole M Lloyd, Francisca R Valdivieso, Thomas G Ksiazek, Jay W Hooper, Alexander Bukreyev, James E Crowe

This study isolates human mAbs from SNV and ANDV survivors, showing broad neutralization of hantaviruses. mAbs ANDV-44 and SNV-53 target a unique glycoprotein site, demonstrating potent neutralization. Four mAbs show therapeutic efficacy in hamsters, suggesting potential for human mAb-based HCPS treatment.

[See details](#)

2026-05-14

## **Andes hantavirus outbreak on a cruise ship - an ESCMID Emerging Infections Subcommittee (EIS) rapid assessment.**

**Journal:** Clin Microbiol Infect

**Authors:** Marta Mora-Rillo, Nitin Gupta, Effrossyni Gkrania-Klotsas, Jan Felix Drexler, Pikka Jokelainen, Sotirios Tsiodras, Galadriel Pellejero-Sagastizabal, Aleksandra Barac, Jose-Ramon Pano-Pardo, F-Xavier Lescure, Martin P Grobusch

[See details](#)

2023-07-26

## **Two point mutations in protocadherin-1 disrupt hantavirus recognition and afford protection against lethal infection.**

**Journal:** Nat Commun

**Authors:** Megan M Slough, Rong Li, Andrew S Herbert, Gorka Lasso, Ana I Kuehne, Stephanie R Monticelli, Russell R Bakken, Yanan Liu, Agnidipta Ghosh, Alicia M Moreau, Xiankun Zeng, Félix A Rey, Pablo Guardado-Calvo, Steven C Almo, John M Dye, Rohit K Jangra, Zhongde Wang, Kartik Chandran

PCDH1's first extracellular cadherin repeat domain binds hantavirus glycoproteins. Mutating key residues protected hamsters from ANDV-induced pulmonary disease and death, highlighting PCDH1 as a potential HCPS intervention target.

[See details](#)

2024-07-31

## **Comparison of uridine and N1-methylpseudouridine mRNA platforms in development of an Andes virus vaccine.**

**Journal:** Nat Commun

**Authors:** Ivan V Kuzmin, Ruben Soto Acosta, Layne Pruitt, Perry T Wasdin, Kritika Kedarinath, Keziah R Hernandez, Kristyn A Gonzales, Kharighan Hill, Nicole G Weidner, Chad Mire, Taylor B Engdahl, Woohyun J Moon, Vsevolod Popov, James E Crowe, Ivelin S Georgiev, Mariano A Garcia-Blanco, Robert K Abbott, Alexander Bukreyev

ANDV mRNA vaccines with U or m1 $\Psi$  induced similar immune responses in mice, with slight GC and interferon response differences. Both protected hamsters against lethal ANDV challenge, with no significant m1 $\Psi$  effect on immunogenicity or protection.

[See details](#)

2026-03-01

## **High-resolution in situ structures of hantavirus glycoprotein tetramers.**

**Journal:** Cell

**Authors:** Luqiang Guo, Elizabeth McFadden, Megan M Slough, E Taylor Stone, Jacob Berrigan, Eva Mittler, Kiara Hatzakis, Troy Hinkley, Heather S Kain, Zunlong Ke, Nikole L Warner, Jesse H Erasmus, Kartik Chandran, Jason S McLellan

ANDV glycoprotein tetramer, dimers, and antibody complex structures resolved at 2.35 Å, revealing novel insights into glycoprotein organization, stability, and pH sensing. Immunization with repRNA-encoded ANDV-VLPs elicited high glycoprotein-binding antibody levels, equiv

[See details](#)

2024-06-22

## **Viral shedding and viraemia of Andes virus during acute hantavirus infection: a prospective study.**

**Journal:** Lancet Infect Dis

**Authors:** Marcela Ferrés, Constanza Martínez-Valdebenito, Carolina Henriquez, Claudia Marco, Jenniffer Angulo, Aldo Barrera, Carlos Palma, Gonzalo Barriga Pinto, Analia Cuiza, Leonila Ferreira, María Luisa Rioseco, Mario Calvo, Ricardo Fritz, Sebastián Bravo, Alejandro Bruhn, Jerónimo Graf, Alvaro Llancaqueo, Gonzalo Rivera, Carolina Cerda, Nicole Tischler, Francisca Valdivieso, Pablo Vial, Gregory Mertz, Cecilia Vial, Nicole Le Corre

This prospective study of 131 Andes virus (ANDV) cases in Chile found persistent viraemia and viral RNA in multiple body fluids, with infectivity demonstrated in acute-phase samples. ANDV RNA detection in additional fluids at admission predicted disease severity. Findings highlight potential person-to-person transmission routes and the systemic nature of ANDV infection.

[See details](#)

2020-12-18

## "Super-Spreaders" and Person-to-Person Transmission of Andes Virus in Argentina.

**Journal:** N Engl J Med

**Authors:** Valeria P Martínez, Nicholas Di Paola, Daniel O Alonso, Unai Pérez-Sautu, Carla M Bellomo, Ayelén A Iglesias, Rocio M Coelho, Beatriz López, Natalia Periolo, Peter A Larson, Elyse R Nagle, Joseph A Chitty, Catherine B Pratt, Jorge Díaz, Daniel Cisterna, Josefina Campos, Heema Sharma, Bonnie Dighero-Kemp, Emiliano Biondo, Lorena Lewis, Constanza Anselmo, Camila P Olivera, Fernanda Pontoriero, Enzo Lavarra, Jens H Kuhn, Teresa Strella, Alexis Edelstein, Miriam I Burgos, Mario Kaler, Adolfo Rubinstein, Jeffrey R Kugelman, Mariano Sanchez-Lockhart, Claudia Perandones, Gustavo Palacios

ANDV outbreak in Argentina (2018-2019) involved 34 cases, 11 deaths, driven by 3 symptomatic super-spreaders at crowded events. Genomic analysis linked it to the 1996 El Bolsón strain. High viral load and liver injury correlated with increased transmission. Public health interventions reduced the reproductive number from 2.12 to 0.96.

[See details](#)

2023-08-28

## Hantavirus in humans: a review of clinical aspects and management.

**Journal:** Lancet Infect Dis

**Authors:** Pablo A Vial, Marcela Ferrés, Cecilia Vial, Jonas Klingström, Clas Ahlm, René López, Nicole Le Corre, Gregory J Mertz

Hantaviruses, zoonotic viral hemorrhagic fevers, globally distributed, transmitted via rodents (except Andes, which is person-to-person). Target endothelial cells, causing increased vascular permeability. Main syndromes: HFRS (Europe/Asia) and HCPS (Americas). Early diagn

[See details](#)

## Relevant news

This section presents official reports from health agencies, manufacturers and press releases with reliable sources.

2026-05-21

### **Andes hantavirus outbreak in cruise ship, 21 May 2026**

**Source:** ECDC

Cluster of severe respiratory illness on MV Hondius linked to Andes hantavirus: 11 cases (9 confirmed, 2 probable) as of 22 May. No new cases or deaths. Ship docked in Rotterdam for sanitation. Further cases possible among returned passengers; risk to EU/EEA population remains very low.

[See details](#)

2026-05-12

### **Cas d'hantavirus à bord du navire MV Hondius**

**Source:** Ministère de la Santé

Following WHO's 2 May alert on Andes hantavirus detected on MV Hondius, French and international authorities activated medical monitoring. Five French nationals were repatriated; one tested positive and is in critical condition, four tested negative and remain isolated. Contact tracing around a confirmed case who died in Johannesburg identified 22 contacts, all negative and isolated. No viral circulation is detected in France; no specific measures are recommended for the general population.

[See details](#)

2026-03-01

## Rapports d'activité du CNR Hantavirus

**Source:** Institut Pasteur

Since January 2026, 50 samples from 47 patients were tested; 19 recent hantavirus infections confirmed (18 PUUV). Four cases linked to exposure in Luxembourg/Belgium excluded. Fifteen French cases remain, median age 35. Activity aligns with expected seasonal levels.

[See details](#)

2026-05-22

## Hantavirus : un nouveau cas confirmé chez un membre d'équipage du "MV Hondius" rapatrié aux Pays-Bas, annonce l'OMS

**Source:** France Info

Concern has eased but the MV Hondius hantavirus cluster remains under close watch. A new crew case was confirmed after repatriation from Tenerife, bringing the total to 12 cases and 3 deaths. The ship is being disinfected. One French patient remains in ICU; 22 contacts in France are under monitoring.

[See details](#)

# Clinical Studies

This section presents relevant clinical trials.

2018-09-20

## **Andes Virus DNA Vaccine for the Prevention of Hantavirus Pulmonary Syndrome Using the Pharmajet Stratis(R) Needle-Free Injection Delivery Device**

**Status:** Completed

**Sponsor(s):** National Institute of Allergy and Infectious Diseases

Phase 1 trial of 48 healthy adults (18-49) evaluating safety, reactogenicity, and immunogenicity of ANDV DNA vaccine for HPS prevention using Pharmajet Stratis(R) Needle-Free Injection System. Two doses (2 or 4 mg) and 3 or 4 dose regimens tested.

[See details](#)

# Guidelines and practical information

This section lists official manuals of recommendations for clinical practice or public health policy published by leading health organizations.

**SPF**

**[Guidance for the management of contacts and their close entourage](#)**

**ECDC**

**[Rapid scientific advice on the management of passengers - In the context of the Andes virus outbreak on the cruise ship MV Hondius](#)**

**ECDC**

**[Rapid scientific advice on laboratory testing of Andes virus \(ANDV\) for high-risk contacts under the MV Hondius outbreak](#)**

**CDC**

**[Interim Guidance for Public Health Assessment and Management of People with Potential Exposure to Andes Virus](#)**

**CDC**

**[Hantavirus Case Definition and Reporting](#)**

**PAHO**

**[Infection prevention and control of hantavirus infection, including Andes virus disease. Interim regional guidance for suspected or confirmed cases](#)**

**CDC**

**[Andes Virus Outbreak on a Cruise Ship: Frequently Asked Questions](#)**

# Fact sheets

## Phylogeny

Hantaviruses are RNA viruses belonging to the family Hantaviridae (order Elliovirales) and are present on all continents. Each viral taxon is generally associated with a single natural host species, primarily rodents.

Hantavirus infections are relatively uncommon globally, but they are associated with case fatality rates below 15% in Asia and Europe, and up to 50% in the Americas. In Asia and Europe, Puumala virus is the main cause of hemorrhagic fever with renal syndrome, with a low fatality rate of approximately 0.4%. In South America, several hantaviruses responsible for severe cardiopulmonary syndromes circulate in humans, particularly Andes virus, which is associated with high fatality rates.

## Transmission

Transmission to humans occurs primarily through indirect contact via inhalation of aerosols contaminated with excreta (urine, feces) from asymptomatic infected rodents, and more rarely through direct contact or bites.

Human-to-human transmission of hantavirus is rare. It was first confirmed during a nosocomial outbreak of hantavirus pulmonary syndrome in 1996 in southern Argentina and appears to involve only Andes virus.

## Diagnosis

Diagnosis of hantavirus infection relies on a combination of clinical presentation, history of exposure, and laboratory findings. Confirmation is primarily based on molecular methods such as RT-PCR, which detects viral RNA during the viremic phase (up to 10 days after symptom onset), and serological assays (detection of early IgM and later IgG antibodies via ELISA, immunoblot, or immunofluorescence).

## Symptoms

The incubation period ranges from two to six weeks. Initial clinical symptoms are typically influenza-like: fever, headache, and myalgia. These may progress to one of two syndromes: hemorrhagic fever with renal syndrome, or a severe cardiopulmonary syndrome.

## Treatment

Management is supportive and symptomatic. No specific antiviral treatment or approved vaccine is currently available for Andes virus infection in Europe.