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RAPID REVIEW

Insights from Previous Hantavirus (Andes virus) Outbreaks

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Key Findings

- There is limited primary literature on Andes virus (ANDV) infection outbreaks or clusters; therefore, the evidence for or against certain public health measures and infection prevention and control (IPAC) practices is likewise limited.
- Previous outbreaks of ANDV infection where the predominant mode of transmission was person-to-person demonstrate the importance of case isolation and self-quarantine (and daily self-monitoring of symptoms) of contacts for 40–42 days. These public health measures are important in interrupting and stopping ANDV transmission chains.
- The greatest risk of ANDV infection is from close contact in household settings (e.g., household members and sexual partners). Contributing factors to an increased risk of infection for contacts were high viral loads or death in index cases.
- From previous outbreaks, IPAC guidance consistently recommends that patients be managed in single-patient rooms, with standard contact and droplet precautions. Nosocomial transmission was not commonly reported, but proper use of personal protective equipment (PPE) is of utmost importance.

Background

In early May 2026, a cluster of ANDV (*Orthohantavirus andesense*) infections occurred among passengers of the MV Hondius cruise ship that departed from Argentina and traveled the South Atlantic.[1] Andes virus is a hantavirus identified primarily from Argentina and Chile, with the long-tailed pigmy rice rat (*Oligoryzomys longicaudatus*) as the primary natural reservoir.[2] Zoonotic transmission from rodent host to human is typically through the inhalation of aerosolized virions in rodent feces, saliva, and urine. Unlike most other hantaviruses, ANDV has been associated with limited person-to-person transmission, typically requiring close contact.[3] Hantaviruses (including ANDV) cause hantavirus pulmonary syndrome (HPS), also referred to as hantavirus cardiopulmonary syndrome, with case fatality rates ranging from 21% to 50%.[2,4]

This document briefly describes health care and public health responses to previous outbreaks and clusters of ANDV infections, where the predominant mode of transmission was person-to-person. This rapid review concentrates on what public health and IPAC measures were used to limit further transmission.

Methods

For this document, Public Health Ontario (PHO) performed a rapid review of the primary and grey literature on outbreaks and clusters of ANDV infections. PHO Library Services performed a literature search on May 11, 2026, in MEDLINE and Scopus using key words such as “hantavirus”, “Andes virus”, “outbreak”, “hantavirus pulmonary syndrome”, and “South America”. Search strategies are available upon request. English-language peer-reviewed and non-peer-reviewed records that described outbreaks of ANDV infections were included. References from included articles were reviewed for additional articles, which included Spanish-language peer-reviewed records. Out-of-scope for this document was the pathophysiology, modes of transmission, phylogenetics, immunology, and reservoir ecology of ANDV. The search concentrated on the public health response to outbreaks of ANDV infections in Argentina and Chile. Grey literature searches were performed using a grey literature repository (Policy Commons) and custom and general search engines (Google). Grey literature searches used the same key words as the primary literature search.

Results

Self-quarantine and Self-monitoring

One of the key insights from previous outbreaks of ANDV infection is the importance of isolation of cases and self-quarantine of contacts in minimizing continued transmission.[4–11] It was noted that the definition of contact and risk-levels of contacts varied among studies.

Martinez-Valdebenito et al. (2014) reported on five cases of ANDV infection in Chile (2011), in which there was household and nosocomial transmission.[11] The authors suggested that all close contacts among household and health care settings exposed to a confirmed ANDV case should be closely monitored for signs and symptoms of infection (e.g., fever, myalgia, headache, and abdominal pain) for a period of 42 days. We should note that author recommendations were based primarily on the existing literature and guidance at the time of study.

In a retrospective and prospective outbreak investigation of 34 confirmed cases of ANDV infection in Epuyén, Argentina (2018–2019), Martínez et al. (2020) followed an outbreak from a single zoonotic spillover event to three symptomatic cases which drove transmission at crowded gatherings (n=3 super-spreading events: birthday party, wake, and home/hospital).[4] The median R_o was 2.12 (95% credible interval: 1.24–3.35) before self-quarantine was implemented and decreased to 0.96 (95% credible interval: 0.62–1.40) after self-quarantine of contacts was implemented. Self-quarantine limited person-to-person spread and prevented additional super-spreading events. The authors noted that public health authorities implemented isolation for confirmed cases and self-quarantine for high-risk contacts. High-risk contacts were defined as those in close contact for >30 minutes with a confirmed and symptomatic case. High-risk contacts were asked to remain at home during self-quarantine for at least 40 days and were asked to wear N95 respirators when around others.

During the epidemiological investigation of an imported case of ANDV infection (Delaware, United States [US]) in 2018, all contacts were advised to self-monitor their temperature daily for 42 days from last contact with the index case and to seek medical attention if any specified symptoms appeared (i.e., anorexia, chest pain, cough, diarrhea, fever, headache, muscle pain, nausea, or vomiting).[5] During the investigation, the authors defined a high-risk contact as a person with exposure to the case’s bodily fluids. A low-risk contact was a person who did not have exposure to the bodily fluids of the case but provided medical care or attended to the case during a flight or was seated near the case for at least 1 hour during a flight. No contacts developed ANDV infection.

Factors Contributing to Transmission

Several factors were noted to increase the risk of ANDV transmission.[4,6,7,10,12–14]

In a prospective cohort study of 76 index patients and 476 household contacts (16 developed HPS) in Chile (2001–2005), using multivariable logistic regression, the authors noted that risk of transmission to contacts was greatest among sexual partners of index cases (odds ratio [OR]: 9.7; 95% confidence interval [CI]: 1.7–54.7) (Ferrés et al. 2007).[15] In univariate analysis, relative risk of transmission from index cases to contacts was significantly increased for sexual partners, sleeping in the same bed, exposure to saliva (kissing), exposure to urine, and/or exposure to semen.

In a study of nine clusters of 20 ANDV infections from southern Argentina (1993–2005), Lázaro et al. (2007) reported that patients that died were more likely than those that survived to initiate secondary cases (41% vs. 4%, p=0.005).[7] In addition, two clusters involved mothers and their babies, in which breast-feeding could not be ruled out as a mode of transmission.

Among index patients from the Epuyén, Argentina (2018–2019) outbreak, super-spreaders were more likely to have higher viral loads (OR: 1.7; 95% CI. 1.2–3.6), higher levels of alanine aminotransferase (ALT) (OR: 1.6; 95% CI: 1.1–2.7), and more severe thrombocytopenia (OR: 2.9; 95% CI: 1.2–13.2) than non-super-spreaders (Martínez et al. 2020).[4] Disease severity, genomic diversity of ANDV strains, age, and time spent in the hospital had no association with secondary transmission.

Incubation Period and Serial Interval

In a review of previous outbreaks, the incubation period ranged from 7 to 40 days, with a mean serial interval of approximately 20 days.[4–7,10,15–17] Communicability was generally agreed upon to occur during the febrile prodromal phase of disease, a period starting at symptom onset and lasting 3 to 5 days or until acute respiratory distress (cardiopulmonary phase).[10] Approximately 50% of secondary cases were exposed at time of fever onset in the primary case.[4] During outbreaks, serial intervals of 3–5 days are generally indicative of zoonotic transmission, while serial intervals >14 days are indicative of person-to-person transmission.[7,17]

In a prospective cohort study of 76 index patients and 476 household contacts in Chile (2001–2005), Ferrés et al. (2007) noted that the median serial interval between symptom onset in household clusters was 19.5 days (range: 4–30 days).[15]

Martínez et al. (2020), in the 2018–2019 outbreak in Epuyén, Argentina, reported that the mean (± standard deviation [SD]) serial interval was approximately 23 ± 7 days. Incubation periods ranged from 9 to 40 days.[4]

In a study of nine clusters involving 20 cases of ANDV infection in Chile, Lázaro et al. (2007) reported that the mean (± SD) serial interval was 23.4 ± 6.8 days (median: 21; range: 19–40).[7]

Testing of Symptomatic and Asymptomatic Contacts

Whether or not to test (i.e., RT-PCR, serology) symptomatic or asymptomatic contacts varied among the articles reviewed.[5,9–11,15] This variability may be a reflection of the time period of the studies reviewed, use and access to PCR assays, and the evolution in testing strategies used in South America where most of the outbreaks occurred.

In a prospective cohort study of 76 index patients and 476 household contacts in Chile (2001–2005), Ferrés et al. (2007) clinically evaluated each household contact including obtaining blood samples at least weekly for 28 days.[15] Household contacts were those ≥2 years of age who had resided in the same household for at least one night at any point from 30 days before to 7 days after the onset of symptoms in the index case. Six household contacts developed HPS and provided blood samples before symptom onset. No household contacts had positive serology before symptom onset, but ANDV RNA was detected in peripheral blood cells a median of 11 days (range; 7–18 days) before the cardiopulmonary phase of illness, and up to 15 days before prodromal symptom onset.

Martinez-Valdebenito et al. (2014) reported on five cases of ANDV infection in Chile (2011), in which there was household and nosocomial transmission.[11] Symptomatic contacts underwent ANDV RT-PCR in addition to testing for specific IgM after the onset of fever. No asymptomatic contacts were offered testing.

In a review of the outbreak of ANDV infection in Epuyén, Argentina (2018–2019), Domínguez et al. (2020) noted that 26 contacts were followed for 4 weeks, monitoring symptoms daily and testing weekly using RT-PCR; all samples tested were negative.[9]

Infection Prevention and Control

From previous outbreaks, several IPAC recommendations for health care workers were consistently implemented such as patients managed in single-patient rooms with standard contact and droplet precautions.[5–9,11,13,18]

In several instances, nosocomial transmission was absent from outbreaks or clusters, and at a minimum, contact and droplet precautions were recommended for patient care.[4,12,17,19] An outbreak of ANDV infections occurred in Chile from 1997–1998 and included 29 cases (16 confirmed) and three family clusters (Toro et al. 1998).[17] The lack of cases among health-care workers suggested that the IPAC precautions methods used were adequate, which consisted of cases isolated in separate rooms, contact and droplet precautions implemented, and respiratory precautions (not defined by authors) considered. In an epidemiological study of an outbreak in Chile (1997), Chaparro et al. (1998) noted that there was no person-to-person transmission from cases to healthcare workers, despite the inconsistent use of any precautions (including PPE) during patient care.[19]

Conclusion

This document summarizes the main lessons learned from previous outbreaks of ANDV infection in Argentina and Chile. As part of this rapid review document, 19 primary articles and 3 grey literature sources, focusing on past outbreaks and clusters were included. The volume of literature on ANDV outbreak investigations was relatively low and the evidence scant, several lessons learned were noted. While out-of-scope for this rapid review, but important to note was that improved patient outcomes were aided by early clinical suspicion, rapid laboratory diagnosis, and expedited transfer of patients to a hospital with an intensive care unit.[6,10,20–24] These lessons learned can support Ontario's planning and preparedness.

References

1. Kupferschmidt K. Cruise ship outbreak spotlights a little-studied hantavirus. Science. 2026;392(6799):672-3. Available from: https://doi.org/10.1126/science.aei8221
2. Jonsson CB, Figueiredo LT, Vapalahti O. A global perspective on hantavirus ecology, epidemiology, and disease. Clin Microbiol Rev. 2010;23(2):412-41. Available from: https://doi.org/10.1128/cmr.00062-09
3. Wells RM, Sosa Estani S, Yadon ZE, Enria D, Padula P, Pini N, et al. An unusual hantavirus outbreak in southern Argentina: person-to-person transmission? Emerg Infect Dis. 1997;3(2):171-4. Available from: https://doi.org/10.3201/eid0302.970210
4. Martínez VP, Di Paola N, Alonso DO, Pérez-Sautu U, Bellomo CM, Iglesias AA, et al. "Super-spreaders" and person-to-person transmission of Andes virus in Argentina. N Engl J Med. 2020;383(23):2230-41. Available from: https://doi.org/10.1056/NEJMoa2009040
5. Kofman A, Eggers P, Kjemtrup A, Hall R, Brown SM, Morales-Betoulle M, et al. Notes from the field: contact tracing investigation after first case of Andes virus in the United States - Delaware, February 2018. MMWR Morb Mortal Wkly Rep. 2018;67(41):1162-3. Available from: https://doi.org/10.15585/mmwr.mm6741a7
6. Kuenzli AB, Marschall J, Schefold JC, Schafer M, Engler OB, Ackermann-Gäumann R, et al. Hantavirus cardiopulmonary syndrome due to imported Andes hantavirus infection in Switzerland: a multidisciplinary challenge, two cases and a literature review. Clin Infect Dis. 2018;67(11):1788-95. Available from: https://doi.org/10.1093/cid/ciy443
7. Lázaro ME, Cantoni GE, Calanni LM, Resa AJ, Herrero ER, Iacono MA, et al. Clusters of hantavirus infection, southern Argentina. Emerg Infect Dis. 2007;13(1):104-10. Available from: https://doi.org/10.3201/eid1301.060404
8. Pan American Health Organization (PAHO). Hantavirus in the Americas: guidelines for diagnosis, treatment, prevention, and control. Washington, DC: PAHO; 1999. Available from: https://iris.paho.org/server/api/core/bitstreams/ab4454a1-182e-4a98-a64e-db62e1f96394/content
9. Domínguez G, González Coloma F, Oyarzún D, Ferrés M, Martínez-Valdebenito C, Henríquez C, et al. [Epuyen lessons: one year after the outbreak of hanta virus]. Spanish. Rev Med Chil. 2020;148(3):416-8. Available from: https://doi.org/10.4067/s0034-98872020000300416
10. Martínez VP, Bellomo C, San Juan J, Pinna D, Forlenza R, Elder M, et al. Person-to-person transmission of Andes virus. Emerg Infect Dis. 2005;11(12):1848-53. Available from: https://doi.org/10.3201/eid1112.050501
11. Martinez-Valdebenito C, Calvo M, Vial C, Mansilla R, Marco C, Palma RE, et al. Person-to-person household and nosocomial transmission of Andes hantavirus, Southern Chile, 2011. Emerg Infect Dis. 2014;20(10):1629-36. Available from: https://doi.org/10.3201/eid2010.140353
12. Castillo C, Villagra E, Sanhueza L, Ferrés M, Mardones J, Mertz GJ. Prevalence of antibodies to hantavirus among family and health care worker contacts of persons with hantavirus cardiopulmonary syndrome: lack of evidence for nosocomial transmission of Andes virus to health care workers in Chile. Am J Trop Med Hyg. 2004;70(3):302-4. Available from: https://doi.org/10.4269/ajtmh.2004.70.302

13. Enría D, Padula P, Segura EL, Pini N, Edelstein A, Posse CR, et al. Hantavirus pulmonary syndrome in Argentina. Possibility of person to person transmission. Medicina (B Aires). 1996;56(6):709-11. Available from: https://www.medicinabuenosaires.com/revistas/vol56-96/6/hantavirus.htm

14. Cantoni G, Lazaro M, Resa A, Arellano O, Amestoy AM, De Bunder S, et al. Hantavirus pulmonary syndrome in the Province of Rio Negro, Argentina, 1993-1996. Rev Inst Med Trop Sao Paulo. 1997;39(4):191-6. Available from: https://doi.org/10.1590/s0036-46651997000400002

15. Ferrés M, Vial P, Marco C, Yanez L, Godoy P, Castillo C, et al. Prospective evaluation of household contacts of persons with hantavirus cardiopulmonary syndrome in Chile. J Infect Dis. 2007;195(11):1563-71. Available from: https://doi.org/10.1086/516786

16. Vial PA, Valdivieso F, Mertz G, Castillo C, Belmar E, Delgado I, et al. Incubation period of hantavirus cardiopulmonary syndrome. Emerg Infect Dis. 2006;12(8):1271-3. Available from: https://doi.org/10.3201/eid1208.051127

17. Toro J, Vega JD, Khan AS, Mills JN, Padula P, Terry W, et al. An outbreak of hantavirus pulmonary syndrome, Chile, 1997. Emerg Infect Dis. 1998;4(4):687-94. Available from: https://doi.org/10.3201/eid0404.980425

18. UK Health Security Agency. Andes hantavirus: epidemiology, outbreaks and guidance [Internet]. London: Crown copyright; 2021 [cited 2026 May 15]. Available from: https://www.gov.uk/guidance/andes-hantavirus-epidemiology-outbreaks-and-guidance#infection-prevention-and-control

19. Chaparro J, Vega J, Terry W, Vera JL, Barra B, Meyer R, et al. Assessment of person-to-person transmission of hantavirus pulmonary syndrome in a Chilean hospital setting. J Hosp Infect. 1998;40(4):281-5. Available from: https://doi.org/10.1016/s0195-6701(98)90304-8

20. Riquelme R, Rioseco ML, Bastidas L, Trincado D, Riquelme M, Loyola H, et al. Hantavirus pulmonary syndrome, southern Chile, 1995-2012. Emerg Infect Dis. 2015;21(4):562-8. Available from: https://doi.org/10.3201/eid2104.141437

21. Vial PA, Ferrés M, Vial C, Klingström J, Ahlm C, López R, et al. Hantavirus in humans: a review of clinical aspects and management. Lancet Infect Dis. 2023;23(9):e371-82. Available from: https://doi.org/10.1016/s1473-3099(23)00128-7

22. Pan American Health Organization (PAHO); World Health Organization (WHO). Epidemiological alert: hantavirus pulmonary syndrome in Americas region - 19 December 2025 [Internet]. Washington, DC: PAHO; 2025 [cited 2026 May 15]. Available from: https://www.paho.org/sites/default/files/2025-12/2025-12-19-epidemiological-alert-hantavirus-engfinal_0.pdf

23. Martínez VP, Bellomo CM, Cacace ML, Suarez P, Bogni L, Padula PJ. Hantavirus pulmonary syndrome in Argentina, 1995-2008. Emerg Infect Dis. 2010;16(12):1853-60. Available from: https://doi.org/10.3201/eid1612.091170

24. Navarrete M, Hott M, Caroca J, Leyton L, Venegas N, Ismail K, et al. [Correlation between clinical and laboratory criteria of suspected hantavirus cases and the results of the reference diagnostic technique]. Spanish. Rev Chilena Infectol. 2016;33(3):275-81. Available from: https://doi.org/10.4067/s0716-10182016000300004

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