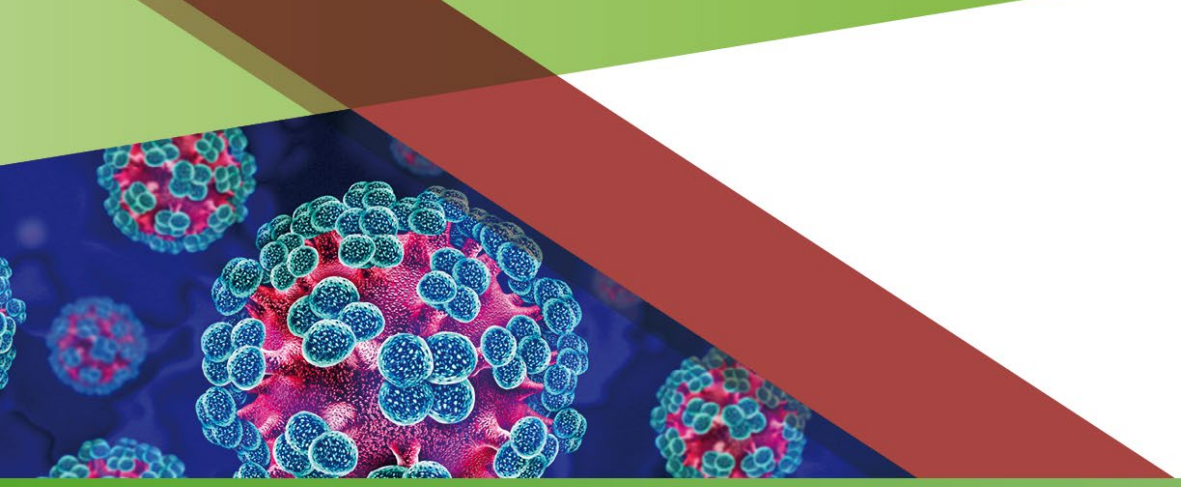

THREAT ASSESSMENT BRIEF

Hantavirus-associated cluster of illness on a cruise ship: ECDC assessment and recommendations

6 May 2026

This is a rapidly evolving incident, and this document contains a preliminary assessment and recommendations. ECDC will provide updates as information becomes available.

Summary

Epidemiological situation

As of 6 May 2026, seven cases have been reported in a hantavirus-associated cluster of illness on a cruise ship, including three deaths, one critically ill, two symptomatic and one with unknown status.

ECDC was notified on 2 May 2026 by the Netherlands via the European Union (EU) Early Warning and Response System (EWRS) about a cluster of unknown disease with severe respiratory symptoms on a cruise ship in the South Atlantic, operating under a Dutch flag. There were 149 people on board from 23 different nationalities, including nine EU/EEA Member States: Belgium, France, Germany, Greece, Ireland, the Netherlands, Poland, Portugal, and Spain. At the time, two people had died and one had been medically evacuated to South Africa, where the person remained critically ill. A PCR test result for a sample taken from this person came back positive for hantavirus on 3 May 2026.

As of 6 May, a total of seven people had presented with symptoms that included fever, respiratory symptoms, and gastrointestinal symptoms, with at least four rapidly progressing to pneumonia, acute respiratory distress and shock. Of these seven people, three died, one was medically evacuated to South Africa and admitted to an intensive care unit (ICU), two remained symptomatic on board, requiring medical assistance, and one was diagnosed after disembarking the ship and returning to Switzerland. In total, samples from two patients tested positive for hantavirus by PCR; a sample from one additional patient tested positive for Andes virus (ANDV) by PCR. Further laboratory investigations are ongoing.

Orthohantavirus infections are viral zoonotic diseases transmitted to humans primarily through the inhalation of aerosols contaminated with the urine, faeces or saliva of infected rodents. Human disease can be caused by several orthohantavirus species, including the Andes (ANDV) and Sin Nombre (SNV) viruses in the Americas and Puumala and Dobrava viruses in Europe. The incubation time is usually around two weeks but ranges from seven days up to six weeks. Clinical manifestation of hantavirus infection is divided in two clinical syndromes: Hantavirus Pulmonary Syndrome (HPS), seen in the Americas; and Haemorrhagic Fever with Renal Syndrome (HFRS) seen in Europe and Asia. Severe cases can rapidly deteriorate and become life-threatening. ANDV is a hantavirus primarily found in South America that causes HPS with a high fatality rate. Human-to-human

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transmission is rare but has been documented in the case of ANDV. No effective antiviral treatment is available; supportive care is key for a better chance of survival.

ECDC provides this risk assessment for discussion at the level of the Health Security Committee including the involved countries, UK HSA and the WHO.

Risk assessment

Person-to-person transmission of ANDV has only been documented following close and prolonged contact. The current hypothesis is that some passengers were exposed to ANDV while spending time in Argentina before embarking, where ANDV is endemic, and may subsequently have transmitted the virus to other passengers onboard the cruise ship. At this early stage of the investigation with limited available information, we consider everyone on the ship to be close contacts, due to the closed setting and shared social areas and activities, aligned with the precautionary principle.

Measures are already implemented on board to reduce the likelihood of infection for passengers and crew on the cruise ship. The cruise ship company and the relevant port authorities have also been advised on how to prepare for the management of cases and contacts (e.g. isolation of cases, use of appropriate personal protective equipment, testing, etc).

Even if transmission of ANDV were to happen from passengers evacuated from the ship, ANDV does not transmit easily so it is unlikely that it would cause many cases or a widespread outbreak in the community, if infection prevention and control measures are applied.

In addition, the natural reservoir for ANDV is not present in Europe, so introduction to the rodent population and potential rodent-to-human transmission in Europe is not expected.

The risk to the general population in the EU/EEA from ANDV spreading from this cruise ship outbreak is very low.

Recommendations

- Symptomatic people should be managed proactively and medically evacuated as soon as possible.
- Upon disembarking, diagnostic testing should be carried out by serology or PCR in people with symptoms. However, negative test results may not exclude infection and subsequent virus shedding. The EURL-PH-ERZV offers diagnostic services to EU/EEA countries lacking capability to diagnose ANDV infection.
- Passengers and crew should practice usual enhanced precautions (e.g. frequent handwashing, respiratory etiquette, physical distancing) and vigilant symptom monitoring while on the cruise ship.
- Infection Prevention and Control (IPC) guidance for healthcare settings who are caring for symptomatic individuals include standard and droplet precautions, which can be escalated to airborne precautions in the event that aerosol-generating procedures are performed.
- Risk communication should be tailored to the different target groups recognising their different levels of risk, information needs and responsibilities. Communication should clearly state what is known, what is unknown, and what may change as investigations progress with timely updates.
- Disembarking passengers should be provided with clear instructions and recommendations until their diagnosis is confirmed or ruled out.

ECDC actions

- Epidemiological updates.
- Hantavirus infection factsheet published.
- European Union Reference Laboratory (EURL-PH-ERZV) offered assistance to EU/EEA national reference laboratories for the diagnosis of ANDV.
- ECDC is supporting the response operations through the EUHTF remotely and on the cruise ship in coordination with the affected countries.
- Ongoing collaboration with partners and affected countries on common case definitions and protocol for management of cases and contacts.

Epidemiological situation

On 2 May 2026, the Netherlands notified, through the Early Warning and Response System (EWRS), a cluster of individuals with severe respiratory symptoms of unknown aetiology on board the cruise ship *MV Hondius*, sailing under the Dutch flag. At the time of notification, two deaths and one severely ill individual were reported. The ship departed Ushuaia, Argentina, on 1 April 2026 and followed an itinerary with several stops at different islands, including South Georgia, Tristan da Cunha, St. Helena and Ascension Island (for a medical evacuation) with Cabo Verde scheduled as the next port of call. There were 149 people on board from 23 different nationalities, including nine EU/EEA Member States: Belgium, France, Germany, Greece, Ireland, the Netherlands, Poland, Portugal, and Spain [1,2].

As of 6 May, a total of seven individuals had presented with symptoms that included fever, respiratory symptoms, gastrointestinal symptoms, with at least four rapidly progressing to pneumonia, acute respiratory distress and shock. Of these seven people, three have died. One person was medically evacuated to South Africa and admitted to an intensive care unit (ICU) and two remained symptomatic on board, requiring medical assistance. One person was diagnosed after disembarking the ship and returning to Switzerland. Samples from two patients tested positive for hantavirus by PCR and have been sequenced as Andes virus (ANDV); a sample from one additional patient tested positive for ANDV by PCR. Further laboratory investigations are ongoing [2].

Orthohantavirus infections are viral zoonotic diseases transmitted to humans primarily through the inhalation of aerosols contaminated with the urine, faeces or saliva of infected rodents. Human disease can be caused by several orthohantavirus species, including the Andes (ANDV) and Sin Nombre (SNV) viruses in the Americas and Puumala and Dobrava viruses in Europe. The incubation time is usually around two weeks but ranges from seven days up to six weeks. Clinical manifestation of hantavirus infection is divided in two clinical syndromes: Hantavirus Pulmonary Syndrome (HPS), seen in the Americas; and Haemorrhagic Fever with Renal Syndrome (HFRS) seen in Europe and Asia. Severe cases can rapidly deteriorate and become life threatening. Human-to-human transmission is rare but has been documented in the case of ANDV. No effective antiviral treatment is available; supportive care is key for better survival.

For more information on the disease caused by hantaviruses, please consult ECDC's factsheet on hantavirus infections and the Technical Annex 1 of this document [3].

The first onset of disease occurred on 6 April in an adult passenger (case 1 – suspected) travelling with their partner. They boarded the cruise ship on 1 April following travel in Argentina, Chile and Uruguay. The passenger (case 1) died on board the ship on 11 April. Their partner (case 2 – confirmed) disembarked on St Helena Island on 24 April and travelled onwards on 25 April to Johannesburg, South Africa. Case 2 had minor gastrointestinal symptoms in St Helena but collapsed upon arrival in Johannesburg and died in an emergency department on 26 April [4]. Samples from this patient tested positive for hantavirus by PCR on 4 May. South African authorities confirmed on 6 May that ANDV was detected through sequencing [5]. Contact tracing has been initiated for passengers on the flight from St Helena to Johannesburg [2].

The third individual, a passenger with underlying medical conditions (case 3 – confirmed), developed symptoms on 24 April. This case was medically evacuated on 27 April from Ascension Island to South Africa and is currently hospitalised in ICU. Laboratory testing using an extensive respiratory pathogen panel was negative. Hantavirus infection was confirmed by PCR on 2 May 2026 and sequencing confirmed ANDV on 6 May [5]. Serology, sequencing and metagenomic analyses are ongoing [2,4].

The fourth individual (case 4 – suspected) presented with fever and general malaise on 28 April and died on board on 2 May [2].

Two crew members (cases 5 and 6 respectively – both suspected) presented with fever, respiratory symptoms and/or gastrointestinal symptoms on 28 and 30 April. Samples from the symptomatic passengers on board were collected on 4 May and sent for laboratory testing to Institute Pasteur de Dakar, Senegal [2].

An additional passenger (case 7 – confirmed) was diagnosed with hantavirus infection in Switzerland following their return [6]. This passenger had disembarked in St. Helena and tested positive by PCR in Switzerland for ANDV on 5 May. No additional details are currently available on this case.

As of the morning of 6 May, the cruise ship remains moored in Cabo Verde with two symptomatic individuals still on board who require medical assistance and are awaiting medical evacuation. The Cabo Verde authorities have not allowed disembarkation of any other passengers from the cruise ship. The cruise ship will continue to the Canary Islands once the symptomatic passengers have been evacuated [1].

ECDC risk assessment for the EU/EEA

This threat assessment brief has been developed based on the data available at the time of publication, with the overall risk determined by a combination of the probability of infection and its impact as far as possible [7].

What is the public health risk of ANDV infection on the cruise ship?

Person-to-person transmission of ANDV has only been documented following close and prolonged contact [8,9]. The current hypothesis is that some passengers have been exposed to ANDV while spending time in Argentina before embarking, where ANDV is endemic, and may subsequently have transmitted the virus to other passengers onboard the cruise ship. At this early stage of the investigation with limited available information, we consider everyone on the ship to be close contacts, due to the closed setting and shared social areas and activities, aligned with the precautionary principle.

Measures are already implemented on board to reduce the likelihood of infection for passengers and crew on the cruise ship. The cruise ship company and the relevant port authorities have also been advised on how to prepare

for the management of cases and contacts (e.g. isolation of cases, use of appropriate personal protective equipment, testing).

What is the public health risk of ANDV infection for the EU/EEA population given the outbreak on the cruise ship?

Even if transmission of ANDV were to happen from passengers evacuated from the cruise ship, ANDV does not transmit easily so it is unlikely that it would cause many cases or a widespread outbreak if infection prevention and control measures are applied.

In addition, the natural reservoir for ANDV (rodent *Oligoryzomys longicaudatus*)) is not present in Europe and therefore introduction to the rodent populations in Europe and potential rodent-to-human transmission is not to be expected.

The risk to the general population in the EU/EEA from ANDV spreading from this cruise ship outbreak is very low.

ECDC recommendations

ECDC provides the following recommendations to public health authorities regarding the management of passengers and crew members of the cruise ship M/V Hondius, where an ANDV hantavirus disease cluster has been detected. These recommendations are based on current scientific evidence on orthohantaviruses, and the recent identification of ANDV in one of the samples and will be reviewed and adapted as new information becomes available.

Identification and clinical management of symptomatic individuals and suspected cases

Hantavirus cardiopulmonary syndrome (HPS) can deteriorate rapidly, and treatment is mainly supportive as there is no approved antiviral treatment. ECDC recommends prioritising early clinical assessment and timely medical transfer of suspected cases to facilities with critical care capacity.

Medical evacuation for symptomatic patients from the cruise ship should be arranged observing appropriate infection prevention precautions, with advance notification to receiving healthcare facilities to allow for preparation. The Union Civil Protection Mechanism (UCPM) under DG-ECHO can offer assistance for these operations.

Laboratory testing and diagnostic strategy

Laboratory diagnosis of hantavirus infections in symptomatic patients is mostly carried out by serology (detection of acute-phase antibodies to hantaviruses), as patients are usually IgM-positive at the symptomatic stage. Due to serological cross-reactivity, assays using Puumula virus antigen can also detect antibodies against ANDV. Molecular diagnostic methods (e.g. detection of viral RNA with polymerase chain reaction, PCR) can be applied to detect virus nucleic acid in the blood, other bodily fluids and in respiratory tract samples in the pre-symptomatic stage or in the first week of illness. However, negative test results cannot exclude infection and subsequent virus shedding. Genetic information on the virus strain is necessary for the selection of the most sensitive molecular method.

The European Union Reference Laboratory for public health on emerging, rodent-borne and zoonotic viral pathogens (EURL-PH-ERZV) offers support to the EU/EEA national reference laboratories for the diagnosis of ANDV infection. It includes the provision of diagnostic protocols, reference material (primers and probes for real-time PCR, nucleic acid controls) for verification, and biosafety advice for handling and inactivation of samples. Additionally, the EURL-PH-ERZV offers diagnostic services to EU/EEA countries lacking capability to diagnose ANDV infection. For further information, please contact the EURL at mailto:EURL-PH-ERZV@folkhalsomyndigheten.se

Infection prevention and control (IPC) recommendations

Given the available epidemiological information, transmission via rodent exposure on board the cruise ship is considered unlikely. Person-to-person transmission of ANDV is possible only with close and prolonged contact. Infection prevention and control (IPC) measures should therefore prioritise precautions relevant to close contact and patient care situations; environmental rodent control measures remain a secondary consideration. Droplet precautions are recommended for patient care, although airborne precautions should be used for aerosol-generating procedures. Additional information can be found at the following references: [10-13].

IPC guidance for the cruise ship

In the current situation, passengers and crew should practice usual enhanced precautions and vigilant symptom monitoring.

- Frequent handwashing: Handwashing is particularly important after contact with people or shared surfaces, before and after handling food, and after toileting. Alcohol-based hand rub (≥70% ethanol or isopropanol) can be used, but soap and water should be used if hands are visibly soiled.
- Respiratory etiquette: Cover the mouth and nose when coughing or sneezing, avoid coughing or sneezing directly into hands, dispose of tissues immediately after use, and wash hands afterwards.
- Routine masking: Passengers and crew should be encouraged to wear facemasks when outside of their rooms/sleeping quarters. If available, type IIR medical/surgical facemasks should be used, and instructions for proper facemask fitting and wearing practices should be shared.
- Physical distancing: Passengers and crew should aim to maintain distances of 1–2 metres between each other when possible.
- Symptom monitoring: If respiratory, gastrointestinal, or flu-like symptoms develop, immediately self-isolate away from others and seek medical care. Symptoms to watch for include headache, cough, abdominal pain or nausea, fever, chills, muscle aches, or chest tightness.

Environmental cleaning and disinfection: Areas frequented by passengers and staff, and in particular frequently touched surfaces such as door handles, screens and railing, should be cleaned regularly. Hantaviruses are readily inactivated by household and healthcare disinfectants including bleach (0.5% sodium hypochlorite), 70% ethanol or isopropanol, or 2% glutaraldehyde. Direct exposure to UV light (sunlight) is also a strong inactivator of hantavirus.

- Consider opening windows as feasible, allowing for natural ventilation.
- Avoid dry sweeping to limit spread of potentially infectious particles.
- Use disposable gloves when cleaning.
- Ensure surfaces are visibly wet with disinfectant for the entire 'wet time' as recommended on the cleaning product label before wiping.

IPC guidance for healthcare settings caring for symptomatic individuals associated with the cruise ship:

- **Patient placement**: Single rooms should be used for each patient if possible. If single rooms are not possible, patients should be separated by a barrier. If multiple patients are diagnosed with the same infectious pathogen, they can be cohorted to the same area. The door does not need to be closed.
- **Personal protective equipment during medical care**: Use droplet precautions in addition to standard precautions, due to the potential for human-to-human transmission for ANDV.
  - Standard precautions: hand hygiene before/during/after care, gloves for contact with body fluids, gown if contact with secretions is anticipated, and eye protection if splashing/sprays are anticipated.
  - Droplet precautions: surgical/medical mask in the patient's room, masking the patient during transport if feasible.
  - For medical procedures that could potentially aerosolise respiratory droplets, consideration should be given to using enhanced airborne and contact precautions, or elements thereof: an FFP2 respirator, eye protection, gloves and a long-sleeved gown.
- **Environmental cleaning and disinfection** of patient areas should follow the cleaning guidance for general ship areas above. Body fluids should be considered potentially infectious and require at least five minutes of wet time.
- Limit transport of the patient to essential purposes only. If possible, the patient should wear a surgical mask during transport.
- Vigilant symptom monitoring should be conducted for the health professionals involved in the care of these patients.

Coordination between port authorities and other services

The 'WHO Handbook for management of public health events on board ships' [14] provides the following recommendations:

- Identify a **single coordination point** connecting the port authority, ship operator, EMS, and public health, that can also assist with controlled disembarkation and routing of passengers and crew members (prioritising those that are ill).
- Inform EMS involved in patient transport and healthcare services in advance of the suspected diagnosis (hantavirus infection) and advise applying standard and droplet precautions during patient transport and management. Review infection prevention and control (IPC) procedures relevant to hantavirus infection.
- Coordinate the follow up of exposed passengers and crew once they disembark, ensuring mechanisms are in place for symptom monitoring and referral during the incubation period.

Risk communication while passengers and crew are still on board

ECDC recommends that public health authorities tailor risk communication to different target groups, recognising their different levels of risk, information needs and responsibilities. All communication should clearly state what is known, what is unknown, and what may change as investigations progress, with timely updates provided as new evidence becomes available.

Individuals presenting clinical symptoms compatible with HPS onboard the affected ship

Symptomatic passengers or crew should receive direct communication from medical staff and public health authorities. This communication should:

- Explain the suspected and differential diagnosis and the reason for concern, including the potential for rapid clinical deterioration.
- If possible, outline what will happen next, including clinical monitoring, isolation measures, testing procedures, and potential medical evacuation if required.
- Emphasise the importance of early reporting of symptom progression, including worsening breathing, dizziness, chest pain, or reduced urine output.
- Provide reassurance that supportive care will be available upon arrival to port.
- Explain why close contact with others is being limited while symptomatic.

Clear, empathetic communication is essential to support adherence to isolation measures and to reduce anxiety among affected individuals.

Asymptomatic individuals on board the affected ship

Provide written communication adapted to a non-clinical audience. Include instructions on which symptoms to watch for, how and when to report symptoms to medical staff, and which measures are expected while on board, such as hygiene practices and mask use if recommended. It should explain the transmission mechanisms of ANDV and the incubation period and clarify the rationale for active symptom monitoring during the period on board. Clearly state that the absence of symptoms does not imply absence of infection, particularly at an early stage of disease, and explain why routine testing of asymptomatic individuals may not be prioritised and how testing decisions are made. At the same time, communication should reassure passengers and crew that, based on current evidence, the risk of transmission from asymptomatic individuals is considered low, aiming to prevent false reassurance while avoiding unnecessary alarm.

Healthcare providers

Communicate with healthcare providers (including primary care, emergency services, and travel medicine clinics) regarding the clinical presentation of hantavirus disease, diagnostic and testing pathways, appropriate IPC measures and reporting. Healthcare providers may also need to provide advice for healthcare professionals regarding returning home to household members after caring for suspected or confirmed ANDV patients.

General population (i.e. individuals not on board the affected ship)

Communication should be proportionate and evidence based, emphasising that hantavirus infections are rare and that the current risk to the general population is considered very low. Explain the typical mode of transmission, why investigations are ongoing, and why precautionary measures are being applied.

Cross-border and international communication

Maintain communication between ECDC and Member States through EpiPulse and EWRS as needed, to ensure consistent messaging, including agreement on case definitions, follow up recommendations, and key uncertainty statements, to avoid contradictory advice.

ECDC actions

Epidemiological updates
ECDC is publishing updates as new information becomes available. These updates are available at the bottom of the Hantavirus infection webpage: https://www.ecdc.europa.eu/en/hantavirus-infection

EpiPulse Events
An event has been opened in the EpiPulse Events platform.

Hantavirus infection factsheet
ECDC published an updated factsheet on hantavirus infection on 4 May 2026. The factsheet was produced by EVD-LabNet prior to the current event and primarily focuses on European orthohantavirus species: https://www.ecdc.europa.eu/en/infectious-disease-topics/hantavirus-infection/factsheet-orthohantavirus-infections

European Union Reference Laboratory (EURL-PH-ERZV)
ECDC is in close contact with the European Union Reference Laboratory for public health on emerging, rodent-borne and zoonotic viral pathogens (EURL-PH-ERZV) and offers support to the EU/EEA national reference laboratories for the diagnosis of ANDV infection through provision of diagnostic protocols, reference material, biosafety advice for handling and inactivation of samples, and also offers diagnostic services to EU/EEA countries for ANDV infection

EU Health Task Force (EUHTF)
ECDC is supporting the response operations through the EUHTF remotely and on the cruise ship in coordination with the affected countries. The support potentially focuses on outbreak investigation, interviews and contact tracing, exit screening, data analysis, risk communication, etc.

Ongoing collaboration with partners and affected countries on common case definitions and protocol for management of cases and contacts.

Limitations

Information still missing for a more accurate assessment of this incident:

- Detailed travel history of cases and suspected cases to cross-check with epidemiological information from the particular areas and develop an accurate timeline of events.
- Laboratory confirmation of ANDV infection in some of the cases.
- Epidemiological evidence for person-to-person transmission on board.
- A recent environmental sampling and search for rodent reservoirs on the ship.
- Limited evidence in literature on ANDV for human-to-human transmission.

External reviewers

Comments from the UKHSA team: Richard Pebody

Comments from the Netherlands: Rosa Joosten, Monica Wong, Gijs Klous

Comments from WHO EURO: Kareena Hundal

Comments from Spain: Gabriela Saravia, Lucía García San Miguel

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Technical Annex 1. Disease background

Hantavirus infections are zoonotic diseases caused by viruses of the genus *Orthohantavirus* (family *Hantaviridae*), transmitted to humans primarily through inhalation of aerosols contaminated with urine, faeces or saliva of infected rodents. In Europe and Asia, orthohantaviruses cause haemorrhagic fever with renal syndrome (HFRS), whereas in the Americas they cause hantavirus cardiopulmonary syndrome (HPS) [3].

In Europe, hantavirus infection is an endemic zoonosis that presents almost exclusively as HFRS. In recent years, EU/EEA countries have reported between approximately 1 500 and 5 000 confirmed cases annually, with a strong year-to-year variation associated with ecological drivers of rodent reservoir populations. Most notified cases are caused by Puumala virus (PUUV), followed by Dobrava-Belgrade virus (DOBV), while Seoul virus (SEOV) contributes only a very small number of sporadic cases. In contrast, hantavirus cardiopulmonary syndrome (HPS) is not endemic in the EU/EEA, and no autochthonous HPS cases have been reported in Europe; only rare, imported cases linked to travel outside Europe have been documented. This epidemiological pattern is consistent with the absence in Europe of the rodent reservoirs associated with HPS-causing hantaviruses in the Americas [15].

The incubation period of hantaviruses is approximately three weeks, with a reported range of 10 days to six weeks. Clinical presentation typically begins with non-specific febrile symptoms such as fever, headache, myalgia and gastrointestinal manifestations, followed by increased vascular permeability leading to hypotension, thrombocytopenia and acute organ dysfunction. In HFRS, renal involvement predominates and the clinical course may progress through febrile, hypotensive, oliguric, polyuric and convalescent phases, while HPS, the syndrome presented in this outbreak, is characterised by rapidly progressive respiratory failure and cardiogenic shock. Disease severity varies by virus species and host factors, ranging from mild or subclinical infection to severe, life-threatening disease. There is no approved specific antiviral treatment, and case management relies on early recognition and supportive care, including intensive care and organ support in severe cases [3].

Andes virus (ANDV) has been laboratory-confirmed in one of the ill passengers that was in the cruise and further sequencing information is still awaited. ANDV is a virus causing HPS that is usually found in the Americas, and it is the only known hantavirus that can be transmitted directly from human-to-human.

Transmission of Andes virus

Human-to-human transmission of ANDV has been documented in the context of close and prolonged contact with symptomatic individuals, particularly during the prodromal and early acute phase of illness. Evidence of a previous outbreak investigation and a prospective virological study indicates that transmission has been observed mainly in household or intimate contact settings and is associated with higher viral loads and more severe disease, while sustained or casual transmission has not been demonstrated [8,9]. Infectivity is highest on the first day of symptom onset.

Clinical presentation and symptoms of Andes virus infection

After an incubation period typically ranging from 10 days to six weeks, ANDV infection usually begins with a prodromal phase characterised by non-specific symptoms, including fever, headache, myalgia, fatigue, and gastrointestinal manifestations such as nausea, vomiting, abdominal pain and diarrhoea. This phase is followed by abrupt progression to the cardiopulmonary phase (HSP), marked by rapidly worsening shortness of breath, cough, hypoxia, pulmonary infiltrates and haemodynamic instability. Laboratory findings commonly include thrombocytopenia, haemoconcentration and elevated inflammatory markers. The clinical course may deteriorate rapidly over hours to days, underscoring the importance of early recognition and prompt supportive management [16,17].

Severity of Andes virus infection

ANDV causes HPS, a severe clinical syndrome associated with high rates of hospitalisation and mortality. More than half of symptomatic ANDV infections progress to severe cardiopulmonary disease, often requiring intensive care, mechanical ventilation, and vasoactive support. Reported case-fatality rates range from 20% to 35% and may be higher in outbreak settings. Severe disease is characterised by profound capillary leakage, leading to non-cardiogenic pulmonary oedema and cardiogenic shock. Higher viral loads and more severe clinical presentation have been associated with increased risk of transmission in documented person-to-person outbreaks, suggesting that disease severity is an important marker of infectiousness, although it is not required for infection to occur [8,9,17].

Is human-to-human transmission of a hantavirus possible?

Although human to human transmission of hantaviruses has been questioned in the past, current peer reviewed evidence indicates that, to date, ANDV is the only hantavirus associated with documented human-to-human transmission. ANDV has been associated with documented amplification events with high associated mortality. No convincing evidence exists for sustained or sporadic human to human transmission of other orthohantaviruses,

including those circulating in Europe (e.g. Puumala virus, Dobrava Belgrade virus). For these viruses, human infection is considered a dead-end event, with transmission occurring almost exclusively through exposure to infected rodent excreta.

Based on the scientific literature, ANDV disease severity appears to correlate with transmission risk, with more severe cases showing higher viral loads and broader viral shedding [8]. However, severity is not a prerequisite for infection. There is no evidence supporting prolonged infectiousness beyond the acute symptomatic phase.

Do asymptomatic individuals have a role in transmission?

Current very limited evidence does not support a significant role for asymptomatic individuals in hantavirus transmission, supporting active symptom monitoring of asymptomatic exposed individuals. Infectivity is highest on the first day of symptom onset, which indicates a high likelihood of some infectiousness one-two days before onset of symptoms.

What does this mean for testing and control measures?

Laboratory diagnosis of hantavirus infection relies primarily on serology and molecular detection by PCR is most useful in the early symptomatic phase, particularly in severe cases. However, viraemia may be short lived and may no longer be detectable by the time mild cases are tested.

Although PCR specificity reaches 100% [18] viral RNA detection in asymptomatic individuals may be missed, and absence of detectable virus does not reliably exclude infection during the incubation phase. In addition, serological testing during incubation is likely to be negative and may provide false reassurance. Testing strategies should therefore prioritise symptomatic individuals, particularly those with severe disease, while asymptomatic exposed persons with a negative test should still be managed through symptom monitoring and clear guidance on healthcare seeking. It is possible that these individuals may be presymptomatic and thus infectious.

Technical Annex 2. Proposed rapid advice for managing the passengers of M/V Hondius at the receiving Point of Entry in the EU

With the diagnosis of Andes virus as the cause of the cluster of respiratory illness onboard this cruise ship, the following procedures are proposed to public health authorities for the management of passengers as they disembark from the ship at the PoE in the EU.

Triage symptomatic passengers first

Upon arrival at port, all passengers and crew should undergo medical triage by trained healthcare professionals. Triage should be based on clinical assessment, symptom history, and epidemiological information, with individuals categorised as symptomatic or asymptomatic.

- Symptoms: fever, cough, difficulty breathing, myalgias, vomiting, diarrhoea, lower back pain.
- All symptomatic persons should be offered and instructed to wear a medical facemask.
- In the triage identify any **close contacts**, defined as including anyone sharing close quarters or cabin, sharing bathroom or other facilities, having prolonged direct face-to-face interaction that can cause exposure to respiratory droplets (e.g. saliva), including provision of healthcare or other assistance without use of a facemask. At this early stage of the investigation with limited available information, we consider everyone on the ship to be close contacts, due to the closed setting and shared social areas and activities, aligned with the precautionary principle.
- This operation can be better organised ahead of time with the collaboration of the public health professional onboard. If not possible, then triage should be organised in a first station at the port. Personal protective equipment for triaging staff: Medical facemasks and frequent hand hygiene before/during/after each interview.

Prioritise testing of symptomatic persons

- There is higher likelihood of a positive result in a person who is already exhibiting symptoms.
- Depending on capacity PCR and/or serology testing can be done.
- **If testing is positive**:
  The individual should receive appropriate medical care according to clinical severity and remain in medical isolation for the duration of the infectious period as determined by clinical assessment.
- **If testing is negative**:
  The individual should remain in isolation pending clinical reassessment, as early testing may be negative due to the incubation period or short-lived viraemia. Ongoing symptom monitoring and repeat testing may be considered if clinically indicated.

Symptomatic people should:

- Self-isolate until the confirmation or ruling out of diagnosis. Medically supervised isolation is preferable.
- Not travel via commercial air flights for repatriation but through medical evacuation.

Management of asymptomatic passengers

After triage, asymptomatic people on board the ship, all of whom ECDC currently considers as close contacts:

- Should be instructed to self-quarantine for six weeks, including self-monitoring of symptoms. During this period and as long as they do not exhibit any symptoms, they can temporarily leave their living quarters (e.g. for medical appointments, necessary exercise for their mental health stability), provided they wear a medical face mask.
- Should be monitored by local public health professionals in their area of permanent residence at a minimum once a week, but if resources allow more frequently. These professionals will be their point of contact also in the event symptoms arise and they need to get tested for hantavirus.
- Medical evacuation should be considered for repatriation of these contacts, or self-quarantine in place.
- Testing of asymptomatic individuals should be performed if resources allow.
  - **If asymptomatic and testing is positive**: The individual should be placed in isolation and monitored closely for symptom development, with follow-up clinical assessment, as appropriate.
  - **If asymptomatic and testing is negative**: The result should be clearly communicated as **not excluding infection**, given the incubation period and limited sensitivity of testing in asymptomatic or early infection stages. The individual should not be considered cleared on the basis of a single negative test and should, as above, undergo self-quarantine and active symptom monitoring for six weeks, with instructions to seek immediate medical attention if symptoms develop.
- Coordination through the EU EWRS system can facilitate the communication among national public health authorities in order to achieve the health monitoring of the asymptomatic repatriated passengers and provide them with a point of contact in their country.