

Hantavirus: An Introduction to an Old Threat Rising from Rodents

These days, the term "hantavirus" may be reaching your ears more than ever before. News of an outbreak on a cruise ship in the middle of the Atlantic Ocean has suddenly pushed this unwelcome guest into the headlines. But is hantavirus truly a new and mysterious threat? Or has it been living silently in nature for years, sheltered within its hosts—rodents?

According to reliable global sources such as the Centers for Disease Control and Prevention (CDC), hantaviruses are a group of viruses primarily transmitted by wild rodents like mice and rats. What makes this virus both unique and frightening is its ability to cause severe respiratory and kidney diseases in humans, which can be fatal if not treated promptly. In this article, we will take you through the complex world of hantavirus in simple, clear language—from how it spreads and its symptoms to prevention, treatment, and the latest outbreaks worldwide.



Differences Between Hantavirus in the Americas and Asia (HPS vs. HFRS)

One of the first things to understand about hantavirus is that it causes different diseases in different parts of the world. Scientists classify these viruses into two main categories based on their geographic distribution and the illness they cause.

1. Hantavirus Pulmonary Syndrome (HPS or HCPS)

This form of hantavirus disease is primarily found in the Americas (North, Central, and South America). As its name suggests, this virus primarily attacks the lungs, causing a severe and dangerous respiratory illness. Unfortunately, the mortality rate for this type is very high, affecting approximately 40% to 50% of confirmed cases. This means that out of every ten people infected with this form of hantavirus, four to five may die. In the United States, the most common hantavirus causing this syndrome is transmitted by deer mice.

2. Hemorrhagic Fever with Renal Syndrome (HFRS)

This type of hantavirus is more common in Europe and Asia (including countries neighboring Iran). Unlike the American type, this virus mainly targets the kidneys, leading to impaired kidney function. Although this form can also be very serious, its mortality rate (between 5% and 15%) is significantly lower than that of the American type. Fortunately, the hantavirus strains found in Iran and many other Asian countries fall into this category. This fundamental difference in how the virus behaves shows that a single approach cannot be applied worldwide—each region has its own distinct pattern.

Routes of Hantavirus Transmission to Humans: From Inhaling Dust to Contact with Rodent Droppings

Now that we are familiar with the two faces of this virus, the important question is: how do humans contract hantavirus? The key to this equation is rodents. Each type of hantavirus typically has a specific rodent host. The virus can live for centuries inside a particular rodent species without causing harm. The problem begins when humans enter the territory of these rodents.



The primary routes of hantavirus transmission from rodents to humans are as follows:

- **Inhalation (the most common route):** When droppings, urine, or saliva from an infected rodent dry out and turn into fine dust particles, these particles can become airborne. If you enter a closed, poorly ventilated environment (such as a barn, rural cabin,

shed, or basement) and breathe in this contaminated dust, the virus can enter your lungs. **Never dry-sweep or vacuum an area with signs of rodent activity.**

- **Direct contact:** If your skin comes into contact with infected rodent urine, droppings, or saliva, and you then touch your mouth, nose, or eyes without washing your hands, the virus can enter your body.
- **Bite wounds:** In rare cases, a bite from an infected rodent can transmit the virus.
- **Contaminated food:** Eating food that has been contaminated with rodent droppings is another potential route of transmission.

A Critical Turning Point: The Andes Virus Exception

Among all these, there is one important exception that has caused concern and confusion. The **Andes virus** strain, common in South America (especially Argentina and Chile), differs from other hantaviruses in that it can be transmitted from human to human. This is the same virus recently reported on the cruise ship.

Research has shown that this strain can spread through close contact with an infected person, possibly via respiratory droplets (similar to influenza), during the early stages of illness when the patient has a fever. However, it is important to note that even this strain is not as contagious as COVID-19, and the World Health Organization (WHO) has emphasized that the global pandemic risk remains very low. Apart from this specific strain, you should never worry about contracting hantavirus from a coworker or neighbor.

Symptoms of Hantavirus: Why a Simple Flu-Like Illness Can Be Deadly

One reason hantavirus disease is so dangerous is that its early symptoms closely resemble those of common seasonal illnesses like the flu or a cold. This can lead to delayed diagnosis and treatment.

The incubation period (time from exposure to symptom onset) is typically 1 to 8 weeks, but symptoms often appear within 2 to 4 weeks after exposure.

Stage 1: Early Symptoms (Flu-Like)

This stage usually lasts a few days and includes:

- High fever
- Profound fatigue and severe weakness
- Severe muscle pain, especially in the thighs, hips, and back
- Dizziness and headache
- Nausea, vomiting, and abdominal pain (which may be mistaken for food poisoning)

Stage 2: Severe Respiratory Symptoms

This stage is critical and dangerous, typically occurring 4 to 10 days after the initial symptoms begin. At this point, the lungs fill with fluid (pulmonary edema), and their function becomes impaired. Warning signs of this stage include:

- Severe cough
- Shortness of breath and a feeling of suffocation
- Rapid and irregular heartbeat
- Sudden drop in blood pressure (shock)

If hantavirus disease reaches this stage, the patient requires immediate intensive care and mechanical ventilation. Unfortunately, it is at this point that many patients die from acute respiratory failure.



Treatment and Diagnostic Challenges

Diagnosing hantavirus is a major medical challenge. In the early stage, because the symptoms mimic more common illnesses such as influenza, leptospirosis, typhoid fever, or even COVID-19, a physician may not initially suspect it. Definitive diagnosis is only possible through specialized blood tests such as ELISA or PCR, which are typically performed at reference laboratories like the CDC or other recognized health organizations.

However, the most important point is that **there is no definitive, specific treatment for hantavirus** (no antiviral drug specifically targeting it). Furthermore, no effective vaccine has been developed to date. Therefore, hantavirus treatment is primarily supportive and is

delivered in an intensive care unit. The goal of medical care is to maintain the patient's body functions while the immune system fights the virus.

Treatments include supplemental oxygen, mechanical ventilation, precise fluid management, and in advanced cases, ECMO (which acts as an artificial heart and lung) to save the patient. Statistics show that if a patient survives the acute phase of hantavirus disease, recovery is typically rapid. However, approximately 38% of individuals with the severe pulmonary form die from the infection.

Best Prevention Methods for Hantavirus at Home and While Traveling

Given the lack of a definitive cure or vaccine, prevention is the only life-saving strategy and the most effective weapon against this virus. The good news is that by following a few simple yet critical precautions, you can easily reduce your risk of hantavirus infection to nearly zero.

Follow these guidelines at home, at work, and especially during outdoor travel:

1. Rodent Control in Living Environments

- Seal any holes and gaps in walls and around pipes to block rodent entry points.
- Store food in sealed, rodent-proof containers.
- Dispose of trash regularly and keep the area around your home clean to eliminate nesting sites.

2. Golden Rules for Cleaning to Prevent Hantavirus Transmission

- If you plan to clean an old environment—such as a basement, attic, cabin, shed, or trailer—where rodents may have been present, **never use a vacuum cleaner or broom.** (Vacuuming aerosolizes the virus.)

- Open windows and doors for at least 30 minutes to ventilate the area.
- Wear an N95 mask and rubber gloves.
- Before cleaning, wet down surfaces and droppings with a disinfectant solution (e.g., bleach diluted 1:10 in water) or another suitable disinfectant. This weighs down virus particles and prevents them from becoming airborne.
- Carefully collect the moistened droppings and place them in a sealed plastic bag. Then disinfect the area with a damp cloth.
- Wash your hands thoroughly with soap and water.

A Critical Public Health Reminder

If you develop flu-like symptoms accompanied by shortness of breath and have a history of exposure to rodent-infested environments, be sure to tell your doctor. Sometimes, a simple statement—"I cleaned an old shed"—can save your life.

Conclusion and Future Outlook: Will Hantavirus Become the Next Pandemic?

Hantavirus is a global threat that knows no geographical boundaries. From farms and forests in the Americas to the Alps in Europe and rural areas across Asia, this virus lies in wait. The recent cruise ship outbreak showed that despite modern quarantine measures and medical advances, nature can still confront us with unpleasant surprises.

But this story is less a doomsday warning and more a call for awareness and responsibility. The COVID-19 pandemic taught us that misinformation and panic can be as destructive as the disease itself. With hantavirus, there is no need for panic—only for respect for the natural environment and adherence to basic hygiene principles.

This virus, which has circulated silently among rodent populations for centuries, only becomes a ruthless killer when humans carelessly enter its territory. By simply understanding the transmission cycle and following prevention guidelines, we can easily remain safe. Research continues toward developing a vaccine and specific treatments for hantavirus, and perhaps in the near future, this virus—like many past threats—will become a manageable disease. Until then, awareness and vigilance remain our greatest assets.