CONDITION

Bunyavirus infection

Learn how bunyaviruses spread, the illnesses they can cause, warning signs, testing, treatment, prevention, and follow-up care.

WHAT IT IS
Group of illnesses caused by bunyaviruses

BODY SYSTEM
Multiple body systems

MAIN SYMPTOMS
Fever, headache, muscle pain, marked tiredness

WHAT CAUSES IT
Viral infection

HOW IT IS DIAGNOSED
Molecular and antibody testing

MAIN TREATMENT
Supportive care

CAN IT BE CURED?
Sometimes, many recover with supportive care

IS IT AN EMERGENCY?
Sometimes, with trouble breathing

LONG-TERM OUTLOOK
Often mild, but severe illness can cause lasting problems

Overview

"Bunyavirus infection" is a broad term for illnesses caused by viruses in the order Bunyavirales . This large group includes hantaviruses, Crimean-Congo hemorrhagic fever virus, Rift Valley fever virus, La Crosse virus, and several other viruses that can infect people.

These viruses do not all cause the same illness. Some mainly affect the lungs or kidneys. Others can inflame the brain or cause a severe fever with problems involving blood vessels, bleeding, or multiple organs. Many infections are mild, but certain bunyaviruses can cause serious disease.

How infection spreads depends on the virus. Mosquitoes and ticks transmit many bunyaviruses. Hantaviruses usually spread through contact with infected rodents or their urine, droppings, or saliva. Some viruses can also spread through contact with infected

animals, blood, or body fluids.

The type of bunyavirus and the likely place of exposure matter. These viruses occur in different regions and animal populations. Travel, work, outdoor activities, and contact with rodents or livestock can help a clinician decide which tests may be appropriate.

The older term "bunyavirus" is still widely used, even though scientific classification has changed. A laboratory result or public health report will usually name the specific virus rather than simply reporting a bunyavirus infection.

Symptoms

Symptoms vary widely. Some people have no symptoms or develop a short, flu-like illness. Others become seriously ill.

Early symptoms may include:

Later symptoms depend on the virus and the organs affected.

Hantavirus pulmonary syndrome begins with fever, muscle aches, and fatigue. Stomach symptoms may occur. It can then cause coughing and rapidly worsening shortness of breath as fluid collects in the lungs. Hantaviruses found mainly in Europe and Asia may instead cause hemorrhagic fever with renal syndrome, which can affect kidney function and blood pressure.

Mosquito-borne viruses such as La Crosse virus can cause encephalitis, meaning inflammation of the brain. Warning signs can include a severe headache, confusion, unusual sleepiness, seizures, weakness, or difficulty speaking. Children are more likely than adults to develop severe neurologic illness from La Crosse virus.

Crimean-Congo hemorrhagic fever may cause sudden fever, severe muscle pain, dizziness, stomach symptoms, and later bruising or bleeding. Rift Valley fever is often mild, but some people develop eye inflammation, encephalitis, liver injury, or a hemorrhagic illness. The word "hemorrhagic" refers to a tendency toward bleeding and blood-vessel injury; visible bleeding does not occur in every case.

Seek emergency medical care for:

Call ahead when possible. Tell the healthcare team about recent travel and possible exposure to rodents, ticks, mosquitoes, livestock, blood, or body fluids. This helps staff arrange suitable testing and infection-control precautions.

- Fever or chills
- Headache

- Muscle or joint pain
- Marked tiredness
- Nausea, vomiting, or diarrhea
- Abdominal pain
- Dizziness
- Red or irritated eyes
- A rash in some infections
- Trouble breathing, chest pressure, or blue or gray lips
- Confusion, fainting, a seizure, or difficulty waking
- A sudden severe headache with fever or neurologic changes
- Heavy or unexplained bleeding, vomiting blood, or black stools
- Signs of shock, such as cold or clammy skin, extreme weakness, or very little urine
- Rapid worsening after a recent tick bite, rodent exposure, animal exposure, or travel to an affected area

Causes and risk factors

Bunyaviruses maintain natural cycles involving animals and insects or ticks. People are often accidental hosts and do not pass the virus onward.

Important exposure patterns include:

Person-to-person spread is unusual for most bunyaviruses. Andes virus, a hantavirus found in South America, has caused person-to-person transmission after close contact. Crimean-Congo hemorrhagic fever can also spread between people. Rift Valley fever has not been shown to spread directly from person to person.

Risk may be higher with activities such as cleaning rodent-infested buildings, sleeping in areas with rodent activity, farming, forestry work, hunting, camping, slaughtering livestock, veterinary work, or healthcare contact with an infected patient. Risk also depends on whether the virus occurs in that geographic area.

Preventive steps should match the likely route of exposure. These may include controlling rodents, ventilating closed buildings before cleaning, wetting contaminated material with an appropriate disinfectant rather than sweeping it dry, using gloves, preventing mosquito and tick bites, and using protective equipment when handling potentially infected animals or body

fluids.

- Rodents: Hantaviruses can spread when infected rodent urine, droppings, or nesting material are disturbed. Tiny contaminated particles may enter the air and be inhaled. Infection may also follow direct contact or a rodent bite.
- Ticks: Crimean-Congo hemorrhagic fever virus can spread through infected tick bites. Contact with blood or tissues from infected livestock can also transmit it.
- Mosquitoes: Rift Valley fever, La Crosse virus disease, and several related illnesses are transmitted by mosquitoes.
- Animals and animal products: Rift Valley fever may follow contact with blood, organs, aborted animal material, or other fluids from infected livestock.
- Blood or body fluids: Crimean-Congo hemorrhagic fever can spread between people through infected blood or body fluids, including in healthcare settings without appropriate precautions.

Diagnosis

A clinician will ask about symptoms and possible exposures. Useful details include where and when you traveled, insect or tick bites, rodent sightings, animal contact, work activities, and contact with anyone who had a similar illness.

Routine blood tests cannot identify a specific bunyavirus, but they may show changes such as low platelets, altered white blood cell counts, or signs of liver, kidney, or clotting problems. Chest imaging may be needed when breathing symptoms are present. A spinal tap may be considered when encephalitis or meningitis is suspected.

Specific testing may include:

Test choice and timing matter. Antibodies may not be detectable very early, while molecular tests may be most useful during a certain phase of illness. A negative early test may not always rule out infection.

Some suspected infections require prompt involvement of local or national public health authorities. Specialized laboratories may be needed because handling certain viruses requires high-level safety precautions. Clinicians should not delay urgent supportive care while waiting for confirmation.

- Molecular testing, such as polymerase chain reaction, to detect viral genetic material
- Antibody testing to identify the immune response to the virus

- Testing of blood samples taken at different times to look for a rising antibody level
- Specialized public health laboratory testing for uncommon or high-risk viruses

Treatment and management

Treatment depends on the specific virus and the severity of illness. There is no single treatment for all bunyavirus infections.

Mild illness may be managed with rest, fluids, symptom relief, and medical follow-up. A clinician can advise which fever or pain medicines are suitable. If a hemorrhagic infection is possible, ask before taking aspirin or nonsteroidal anti-inflammatory drugs like ibuprofen or naproxen because these medicines can affect bleeding or kidney function.

People with severe illness may need hospital care. Supportive treatment can include:

Early intensive care is especially important for hantavirus pulmonary syndrome because breathing and circulation can worsen quickly. Fluid treatment must be managed carefully, since too much fluid may worsen leakage into the lungs.

No antiviral medicine has been proven to treat every bunyavirus. Ribavirin has been used for some cases of Crimean-Congo hemorrhagic fever and hemorrhagic fever with renal syndrome, but evidence of benefit varies by disease and situation. Decisions about antiviral treatment belong with infectious disease specialists and public health authorities. Experimental treatments may be available through clinical trials or emergency-use pathways.

Infection-control measures also depend on the virus. Standard precautions are generally used for illnesses that do not spread between people. Suspected Crimean-Congo hemorrhagic fever requires strict precautions against exposure to blood and body fluids.

- Oxygen or mechanical breathing support
- Intravenous fluids given with careful monitoring
- Medicines to support blood pressure
- Monitoring and treatment of kidney, liver, or clotting problems
- Dialysis if the kidneys cannot adequately filter the blood
- Seizure treatment and neurologic monitoring
- Blood products when clinically necessary

Complications

Complications are determined by the virus and the organs involved. Possible serious outcomes include:

Recovery can take time after a severe infection. Some people have lasting weakness, reduced exercise tolerance, kidney problems, headaches, difficulty concentrating, seizures, or other neurologic effects. Eye disease from Rift Valley fever may lead to persistent vision loss.

The risk of complications cannot be judged from the term "bunyavirus" alone. The specific virus, the person's overall health, and how the illness develops are more informative.

- Respiratory failure from fluid leakage into the lungs
- Very low blood pressure or shock
- Acute kidney injury
- Liver injury
- Abnormal blood clotting or significant bleeding
- Encephalitis, seizures, or other nervous system problems
- Eye inflammation and changes in vision
- Failure of more than one organ

Follow up

Routine follow-up may involve checking whether fever, fatigue, breathing, kidney function, vision, or neurologic symptoms are improving. People who were hospitalized may need repeat blood tests, lung assessment, kidney monitoring, or rehabilitation.

Keep follow-up appointments if symptoms continue even after the fever has resolved. Report ongoing shortness of breath, reduced urination, swelling, unusual bruising, severe fatigue, headaches, memory problems, weakness, or vision changes. Eye symptoms may require an ophthalmologist, a doctor who specializes in eye care.

Seek urgent or emergency care rather than waiting for a routine visit if breathing becomes difficult, confusion develops, a seizure occurs, bleeding is substantial, urine output drops sharply, or symptoms worsen quickly.

Public health staff may contact some patients to clarify exposures, arrange testing, or identify people who need monitoring. Follow any instructions about avoiding blood donation, limiting close contact, or using precautions at home. These instructions vary because only certain bunyaviruses can spread between people.

Sources

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