

VIRAL HEMORRHAGIC FEVER

Background:

VHFs are diseases caused by viruses of four distinct families: arenaviruses, filoviruses, bunyaviruses and flaviviruses. Some types can cause relatively mild illnesses; many can cause severe, life-threatening disease. Transmission can occur from contact with infected animals and animal body fluids (urine, fecal matter, saliva or other body excretions), arthropod vectors, such as being bitten by infected mosquitoes or ticks, person-to-person transfer from close contact, or body fluid exposure.

Incubation Period:

Usually ranges from 2 days to 3 weeks, depending on the etiology of the VHF.

Signs/Symptoms:

- 1) Specific signs and symptoms vary by the type of VHF, but initial signs and symptoms often include: marked fever, fatigue, dizziness, muscle aches, loss of strength and exhaustion.
- 2) Patients with severe cases of VHF often show signs of bleeding under the skin, in internal organs, or from body orifices like the mouth, eyes or ears. Although patients may bleed from many sites around the body, patients rarely die because of blood loss. Severely ill patient cases also may show shock, nervous system malfunction, coma, delirium and seizures. Some types of VHF are associated with renal (kidney) failure.

Laboratory and Diagnostic Testing:

Definitive diagnosis rests on specific virological techniques. Report all suspected cases of VHFs immediately to the local department of public health, IDPH and the CDC. Call IDPH for instructions and handling of specimens. Specimens that may be requested include:

- 1) Blood cultures
- 2) Viral cultures
- 3) Serology tests (acute and recovery phase)
- 4) Stool — especially if patient has copious diarrhea
- 5) Nasopharyngeal swab in viral transport medium
- 6) CBC, DIC panel as clinically indicated

Treatment:

Please note: Ribavirin is **NOT** FDA-approved. Ribavirin should be administered to individuals believed to have VHF after a bioterrorist attack, and to those who develop symptoms after a VHF contact with other sick persons. However, if the causative virus is ultimately identified as a Filoviridae or a Flaviviridae, ribavirin will not be useful in those infections and should not be continued.

(see tables, next page)

Category	Contained Casualty Setting	Mass Casualty Setting and Post-Exposure Prophylaxis
Adults (including pregnant women)	<i>Ribavirin</i> Loading dose: 30 mg/kg IV once (max dose 2 gm); Then 16 mg/kg IV every 6 hrs x 4 days (max dose 1 gm); Then 8 mg/kg IV every 8 hrs x 6 days (max dose 500 mg)	<i>Ribavirin</i> Loading Dose: 30 mg/kg PO once If > 75 kg, 1,200 mg/day PO in 2 divided doses x 10 days If ≤ 75 kg, 1,000 mg/day PO in divided doses. (400 mg in AM; 600 mg in PM) x 10 days
Children	<i>Ribavirin</i> Loading dose: 30 mg/kg IV (max dose 2 gm); Then 16 mg/kg IV every 6 hrs x 4 days (max dose 1 gm); Followed by 8 mg/kg IV every 8 hrs x 6 days (max dose 500 mg)	<i>Ribavirin</i> Loading Dose: 30 mg/kg PO once; Then 15 mg/kg/day PO in 2 divided doses x 10 days
Pregnant Adolescent	Same as for children	Same as for children
Immunocompromised patients	Same as for non-immunocompromised patients	Same as for non-immunocompromised patients

Precautions:

- 1) Isolation (airborne precautions, contact precautions) should be utilized to contain the disease in addition to standard precautions:
 - a) Appropriate barrier precautions during entire hospital stay. Notify clinical and laboratory personnel for appropriate handling of patient and specimens.
 - b) Patients with these symptoms should be placed in a negative-pressure room.
 - c) Face shields and goggles, double gloves, impermeable gowns, leg and shoe coverings should be worn when in contact with patient.
 - d) After patient contact, health care workers should remove gown, leg and shoe coverings, and gloves, and immediately clean their hands. Hands should be clean prior to the removal of facial protective equipment (e.g., personal respirators, face shields and goggles) to minimize exposure of mucous membranes with potentially contaminated hands, and once again after the removal of all personal protective equipment.
 - e) N-95 masks or powered air-purifying respirators, and a negative isolation room with 6-12 air changes per hour, as required by Healthcare Infection Control Practices Advisory Committee standards for airborne precautions.
 - f) Restricted access of nonessential staff and visitors to patient's room, dedicated medical equipment, such as stethoscopes, glucose monitors, and, if available, point-of-care analyzers.
 - g) If patient dies, handling of the body should be minimal. The state health department and CDC should be consulted regarding appropriate precautions.
 - h) Environmental disinfection with an Environmental Protection Agency–registered hospital disinfectant or a 1:100 dilution of household bleach.
- 2) No post exposure vaccine prophylaxis is available with the exception of yellow fever and Argentine hemorrhagic fever.
- 3) Supportive care is the mainstay of therapy.
- 4) Ribavirin, an anti-viral drug, may possibly be effective in treating some individuals exposed to arenaviruses or bunyaviruses.
- 5) Treatment with convalescent-phase plasma has been used with success in some patients with Argentine hemorrhagic fever.

Criteria adapted from the World Health Organization’s surveillance standards for Hemorrhagic Fever Syndrome

If you suspect a poisoning exposure from any bioterrorism agent, immediately contact your local county health department, and the Illinois Poison Center at 1-800-222-1222.