Viral Hemorrhagic Fevers (VHF)

What are viral hemorrhagic fevers (VHF)?
Viral hemorrhagic fever is a term used for a group of illnesses caused by a related family of viruses. Some of these viruses cause human illness, while others do not. Human infections caused by these viruses may range from asymptomatic to severe, even life threatening. Hemorrhagic events (profuse bleeding) and fever are common human symptoms of infection by these viruses, and so are included in the descriptive name viral hemorrhagic fever (VHF).

What are some of the diseases caused by these viruses?
Some well-known diseases are Ebola hemorrhagic fever (HF), Marburg HF, Lassa fever, and Crimean-Congo HF.

How are they spread from animals to humans?
- **Lassa HF**: The natural reservoir for Lassa HF is a specific genus of rodent found in western, central, and eastern Africa. Humans become infected through direct contact with objects contaminated with urine or droppings from infected rodents. Humans may also become infected through inhalation of aerosolized rodent waste. Finally, Lassa fever can be spread through direct contact of blood, tissue, or secretions from an infected person.
- **Crimean-Congo HF**: This type is spread primarily through a tick vector. Argasid or ixodid ticks are capable of carrying the virus. Human infection occurs through tick bites or direct contact of blood or tissue from ruminants such as cattle, sheep, and goats that have been infected through tick bite. Person-to-person transmission occurs in a similar fashion as is seen with Lassa fever.
- **Ebola**: The natural reservoir of Ebola virus is not known, although Ebola HF is thought to be a zoonotic disease. How the virus is passed from the unknown animal host to humans is not clear. What is known is that once a human is infected, the virus spreads efficiently through person-to-person contact. New infections occur through direct contact with the blood, tissue, or other body products of infected individuals.

What are the symptoms of VHF?
- **Lassa HF**: Symptoms generally occur within one to three weeks after exposure, and may include fever, sore throat, retrosternal pain (pain behind the chest wall), back pain, abdominal pain, vomiting, diarrhea, conjunctivitis, facial swelling, proteinuria (protein in the urine), and mucosal bleeding. Complications may include deafness, spontaneous abortion, or death. The fatality rate for Lassa fever is about 1 percent.
- **Crimean-Congo HF**: Symptoms are variable. Immediately after onset, patients will display fever, sore throat, back pain, vomiting, diarrhea, myalgia, dizziness, neck pain, headache, sore eyes, and photophobia (sensitivity to light). Two to four days after onset of symptoms, patients may also display sharp mood swings, confusion, aggression, fatigue, depression, tachycardia (fast heart beat), lymphadenopathy (enlarged lymph nodes), petechial rash (rash caused by bleeding under skin), and mucosal bleeding. The fatality rate of Crimean Congo HF is approximately 30 percent.
- **Ebola HF**: Symptoms of Ebola HF are also not uniform. Within days of infection these symptoms may include fever, sore throat, abdominal pain, vomiting (with blood), diarrhea (with blood), myalgia, dizziness, neck pain, headache, red itchy eyes, and hiccups. Within one week of onset, patients may also display petechial rash, blindness, chest pain, shock, and mucosal bleeding. The fatality rate may range from 50 to 90 percent depending on the subtype of Ebol.

What treatments are available?
Lassa HF and Crimean-Congo HF infections may respond to treatment with the antiviral drug ribiviron. There is also a vaccine against Crimean-Congo HF that has been used on a small scale in parts of Eastern Europe with limited success. There is no drug treatment or vaccination for Ebola virus.

What protection and control measures are available?
In areas endemic to Lassa fever people should avoid contact with rodents and store food in rodent-proof
containers. In areas endemic to Crimean-Congo fever, tick control measures should be used including using tick repellent and checking for ticks at the end of each day. For all known cases of HF, the cases should be isolated from other patients and strict use of barrier techniques should be enforced. An attempt should also be made to identify all people in close contact with infected individuals, including people living with or caring for the infected or laboratory workers handling specimens. These contacts should have body temperature checks for at least three weeks. Immediate hospital isolation should be enacted for any contacts with fever at or above 101°F.

**Additional Information:**

- Centers for Disease Control and Prevention
- Minnesota Department of Health
- Mayo Clinic

*This fact sheet is meant to provide basic information. For specific health concerns please contact your physician or veterinarian. Updated 2005.*