

Viral Hemorrhagic Fever

Agent(s): Viruses of four distinct families including *Arenaviridae* (Argentine, Bolivian, Venezuelan, Brazilian, Chapare and Lujo hemorrhagic fevers, and Lassa fever), *Filoviridae* (Ebola and Marburg hemorrhagic fevers), *Bunyaviridae* (Crimean-Congo hemorrhagic fever, Rift Valley fever, and hemorrhagic fever with renal syndrome [HFRS]), and *Flaviviridae* (dengue hemorrhagic fever, yellow fever, Omsk hemorrhagic fever, and Kyasansur Forest disease). Historically, among the viral hemorrhagic fevers, only dengue hemorrhagic fever has been found to occur naturally in North America.

Mode of Transmission: Varies by agent. Arenaviruses are carried by rodents and are contracted by breathing dust contaminated with saliva, feces or urine of infected rodents, but may also be transmitted person-to-person by infected patients. Filovirus hemorrhagic fevers are contracted through direct contact with blood or body fluids from infected animals or persons. Bunyaviruses are typically transmitted by the bites of arthropods but may also be contracted through contact with the blood and body fluids of infected livestock or people, or in the case of HFRS may be contracted through exposure to dust contaminated with saliva, feces or urine of infected rodents. Hemorrhagic fevers caused by Flaviviruses are typically transmitted by the bites of arthropods (mosquitoes or ticks).

Signs/Symptoms: Vary by type, including but not limited to, malaise, headache, fever, bleeding from the nose and gums, rash, appearance of blood in the eyes, or vomiting. Case-fatality rates can range from 1% (dengue) to 90% (Ebola).

Prevention: Depending on agent, exposure to hemorrhagic diseases can be reduced by rodent control in and around the home in endemic areas, by isolation of infected persons during their febrile period, by preventing contact with blood or body fluids of sick or dead humans or animals, and by avoiding the bites of mosquito or tick vectors.

Other Important Information: Viral hemorrhagic fevers are classified as potential bioweapons because they could cause high mortality, public panic, or social disruption. For surveillance purposes, cases of dengue fever are counted in the Arboviral Infection section of this report, while cases of yellow fever are counted in the Yellow Fever section. Therefore, any cases of dengue fever or yellow fever, including those with hemorrhagic signs, will be discussed in their respective sections of this surveillance report.

Although the largest outbreak of Ebola virus ever to be recorded in human history occurred across four West African countries in 2014, there were no human cases of Ebola imported into Virginia by travelers from West Africa. Additionally, no cases of viral hemorrhagic fever of any type were reported in Virginia during 2014. In 2011, one case of dengue hemorrhagic fever was reported and was counted for surveillance purposes as an arboviral condition and was discussed in the Arboviral Infection section of the report.