VIRUS
Arteriviridae
Simarterivirinae
Simian hemorrhagic fever virus, Simian hemorrhagic encephalitis virus, Pebjah virus baboon virus 1

Simian Hemorrhagic Fever

Animals affected	Transmission	Clinical Signs	Treatment	Prevention & Control
Natural host: Patas monkey (*Erythrocebus patas*) and other African cercopithecoid monkeys Aberrant host: Asian macaques	Direct and indirect contact with infected animals, aerosol, secretions or fomites Iatrogenic transmission by parenteral inoculation of infected tissues or blood	Sudden death Anorexia, lethargy, fever, diarrhea or melena with frank blood, facial edema, petechia, DIC Typically, asymptomatic in African primates	Isolation of unaffected animals No successful clinical treatment	Testing of African primates Separation of African primates and macaques in captivity
Severity? Fatal in macaques, but asymptomatic to rare clinical disease in natural hosts				
Zoonotic? No				

Current update by Rachel Ferris (2024) | **Reviewed by** Yasmeen Prud'homme (2025)

Originally compiled by Thomas P. Meehan (2011); updated by Dawn Zimmerman (2013, 2017)

Susceptible animal groups: Captive rhesus macaques (*Macaca mulatta*) were affected during an "explosive" outbreak in the index case in 1964. This and subsequent outbreaks in macaques have resulted from contact with asymptomatic captive African monkeys. African cercopithecoid monkeys including Patas monkey (*Erythrocebus patas*), vervet monkeys (*Cercopithecus aethiops*) and baboons (*Papio* spp.) are suspected to be the natural reservoirs for simian hemorrhagic fever virus, the best characterized simarterivirus. Red colobus monkeys (*Procolobus rufomitratus tephrosceles*) and red-tailed guenons (*Cercopithecus ascanius*) also have been identified as natural hosts for other variants. Currently, SHFV is thought only to affect Asian macaques of diverse species, including: rhesus macaque (*Macaca mulatta*), bonnet macaque (*M. radiata*), cynomolgus macaque (*M. fasicularis*), stump-tailed macaque (*M. arctoides*), Assam macaque (*M. assamensis*) and Southern pig-tailed macaque (*M. nemestrina*).

Causative organism: Simian hemorrhagic fever is caused by simian arteriviruses, including simian hemorrhagic fever virus (SHFV), simian hemorrhagic encephalitis virus (SHEV), and Pebjah virus (PBJV). The best characterized of these is simian hemorrhagic fever virus. Since 2011, nine additional simian arteriviruses have been discovered in African cercopithecid primates and are potential causes of SHF.

Zoonotic potential: None; however, the virus has been researched for species jump potential due to the presence of highly divergent SHFV variants and *in vitro* replication in human monocytes has been demonstrated.

Distribution: Natural hosts in Africa, but consideration for captive animals worldwide.

Incubation period: 2-9 days

Clinical signs:

- Natural hosts: Typically asymptomatic, but pathogenic strains may cause fever, facial edema, dehydration, diarrhea, ataxia, anorexia
- Macaques: Typically fulminant and fatal. Fever, depression, facial edema, anorexia, adipsia, dehydration, proteinuria, hematuria, cyanosis, skin petechiae, melena, epistaxis, DIC, and retrobulbar hemorrhages can be present. Mortality ranges widely at 11-100% (64% in recent study) but death occurs in 5-25 days.

Postmortem, gross, or histologic findings:

- Petechial hemorrhages on mucosal and serosal surfaces, hemorrhage of proximal duodenum, splenomegaly, splenic lymphoid follicles ringed with zone of hemorrhage, multi-organ necrosis, vasculitis and hemorrhage, intravascular fibrin, fibrin in spleen, rarely lymphohistiocytic meningoencephalitis.
- The absence of hepatocellular or adrenal necrosis distinguishes this viral infection from that of Ebola virus and Marburg virus, which are differentials for hemorrhagic fever in primates.

Diagnosis: Real time RT- PCR, ELISA, DIA.

Material required for laboratory analysis: blood, serum.

Relevant diagnostic laboratories:

- Zoologix, Chatsworth CA; USA; 818-717-8880.
- VRL, San Antonio, Texas, USA; 877-615-7275.

Prevention and control: Separation of African monkeys and macaques in captive settings. Testing of African monkeys for antibodies. Due to the indication that SHF may be caused by a number of distinct simian arteriviruses, screening procedures for SHFV in primate-holding facilities should allow for detection of all known simian arteriviruses.

Suggested disinfectant for housing facilities: Disinfectants effective against *Arteriviridae*: quaternary ammonium and glutaraldehyde mixture (Synergize™, Preserve International) 0.8%, potassium monopersulfate (Virkon-S ™, DuPont Animal Health) 1.0%.

Notification: None.

Measures required under the Animal Disease Surveillance Plan: None.

Measures required for introducing animals to infected animal: Not recommended.

Conditions for restoring disease-free status after an outbreak: Depopulation of affected macaque group and premise disinfection.

Experts who may be consulted:

- Centers for Disease Control and Prevention (CDC) Division of Global Migration and Quarantine; 770-488-7100.

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