

# Rift Valley Fever

Last Updated: June 1, 2006

*A Disease Fact Sheet  
for Livestock Specialists*

*For more technical information,  
see the technical version  
of this fact sheet at  
[http://www.cfsph.iastate.edu/  
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## Importance

Rift Valley fever (RVF) is a viral disease of sheep, cattle, and goats that is spread by mosquitoes. The mortality (death) rate is high in young animals, as is the abortion rate in infected animals. RVF is highly contagious to humans producing fever and flu-like symptoms. Severe bleeding (hemorrhages), inflammation of the brain and problems with the retina of the eye occasionally occur and may be fatal in humans.

## Etiology

Rift Valley Fever is caused by a single-stranded RNA virus in the Phlebovirus genus of the family Bunyaviridae.

## Species affected

Many species can be infected by the RVF virus, including humans. Sheep and cattle are the primary hosts and multipliers of this virus. Goats and dogs are also highly susceptible. Horses and pigs are resistant to this disease. Birds are not susceptible to RVF.

## Geographic distribution

Rift Valley fever is found throughout most of Africa. Recent outbreaks have occurred in Saudi Arabia and Yemen.

## Transmission

Rift Valley fever is spread among animals and humans by mosquitoes. *Aedes* (AY-dees) mosquitoes are the reservoir for the virus. Rift Valley fever is not currently found in the United States, although the mosquito that can carry this disease is present. In some regions of the world, outbreaks often occur in 5 to 15 year cycles, and are typically seen after periods of heavy rainfall in normally dry areas. Between outbreaks, the virus may be present in dormant eggs of the mosquito *Aedes* in the dry soil of grasslands. Heavy rainfall allows water to accumulate, providing a hatching ground for the eggs. These infected mosquitoes develop and transmit the virus to ruminants (cattle, sheep, or goats). Other types of mosquitoes can then become infected and rapidly spread the disease. If susceptible animal species are present, there are many cases of RVF. In many areas of Africa, the disease is present all of the time (enzootic) and sentinel animals are used to monitor its presence.

The Rift Valley fever virus can also spread by aerosols to humans who handle infected tissues, for example when performing field necropsies. This virus can survive up to 4 months at 4°C, and 8 years at temperatures below 0°C.

## Incubation period

The incubation period for Rift Valley fever is up to 3 days in sheep, cattle, goats, and dogs. In newborn animals, it can be as short as 12 hours.

## Clinical signs

The clinical signs of Rift Valley fever vary with species and age. They can include fever, loss of appetite, weakness, and death within 36 hours in lambs. Adult sheep may have a fever, cloudy nasal discharge, and possibly vomiting. Fever and depression are seen in calves, and fever, weakness, loss of appetite, excessive salivation, and sometimes foul-smelling diarrhea in adult cattle. Abortion is the most common sign when pregnant animals are present.

# Rift Valley Fever (RVF)

## Post mortem lesions

Liver damage is the primary lesion, and is especially extensive in younger animals and fetuses. The liver will appear enlarged, yellow, crumble easily and have pinpoint bleeding. In older animals, liver damage can be more localized and may only be visible microscopically. Skin hemorrhages, hemorrhages on internal organs and intestines may also be seen.

## Morbidity and mortality

Rift Valley fever is often fatal in young lambs, calves, and kids. In lambs less than 1 week of age, the mortality (death) rate can be 90% or higher. In calves it is 10–70%. The mortality rate is about 20% in adult sheep, especially ewes that have aborted, and 10% in adult cattle. Abortion rates are high; up to 100% of infected sheep, cattle, and dogs may abort.

## Diagnosis

### *Clinical*

Rift Valley fever should be considered when the following group of conditions occurs: high abortion rates, especially in sheep, cattle and dogs; high rates of mortality in young ruminants; severe liver damage on necropsy of young animals and fetuses; flu-like symptoms in humans; high numbers of mosquitoes; and rapid spread of disease.

### *Differential diagnosis*

The clinical signs of Rift Valley fever in animals can be similar to those of bluetongue, Wesselsbron, ephemeral fever, enterotoxemia of sheep, brucellosis, vibriosis, trichomoniasis, Nairobi sheep disease, heartwater, ovine enzootic abortion, *Campylobacter* or *Salmonella* infection, listeriosis, toxoplasmosis, or any other cause of abortion.

### *Laboratory tests*

Rift Valley fever is confirmed using specialized tests performed at a diagnostic laboratory. There are numerous methods of detecting the virus from an animal's blood sample.

### *Samples to collect*

Before collecting or sending any samples from Rift Valley fever suspects, the proper authorities should be contacted. Samples should only be sent under secure conditions and to authorized laboratories to prevent spread of the disease. The types of samples the attending veterinarian will collect include: blood, liver, spleen, kidney, lymph nodes, brain, and dead fetuses.

Rift Valley fever can be transmitted from animals to people (zoonotic disease). Care should be taken to avoid exposure to aerosols and infected tissues. At the minimum, a face mask that filters virus particles and rubber gloves should be worn.

## Recommended actions if Rift Valley fever is suspected

### *Notification of authorities*

A quick response is important in containing an outbreak of Rift Valley Fever. If you suspect a case of RVF, consult a veterinarian who will decide whether state and federal veterinarians should be alerted.

### *Vaccination of animals*

Currently the vaccine for Rift Valley fever is not approved for use in animals in the United States. Research is underway to develop a safer vaccine. If vaccination is required as determined by the regulatory authorities, use vaccine only as directed.

### *Quarantine and disinfection*

Sanitation and mosquito control should be attempted, but often are insufficient to control the spread of disease. RVF virus is inactivated by bleach. A cup and a half of bleach to a gallon of water (5,000 parts per million) applied to surfaces free of manure, animal tissues, and visible debris is an adequate disinfectant. Carcasses should be buried or burned.

### *Public health*

Humans are highly susceptible to RVF infection by mosquitoes or by exposure to aerosols when handling infected tissues during slaughter, necropsy, or laboratory procedures. In humans, the incubation period is 4 to 6 days. The symptoms are flu-like and may include fever, weakness, muscle pain, headache, nausea, and the inability to tolerate light (photophobia). It is not known whether Rift Valley fever causes abortions in pregnant women. Recovery generally occurs after 4 to 7 days. Occasionally, a bleeding disorder may develop 2 to 4 days after the fever appears. The signs include yellowing of the skin and whites of the eyes (jaundice), vomiting blood, dark tarry stools, pinpoint bleeding, and death. Some patients may have inflammation of the brain and problems with the retina of the eye that develops 5 to 15 days after the onset of fever.

## For More Information

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- World Organization for Animal Health (OIE)  
<http://www.oie.int>
- OIE Manual of Standards  
[http://www.oie.int/eng/normes/mmanual/a\\_summry.htm](http://www.oie.int/eng/normes/mmanual/a_summry.htm)
- OIE International Animal Health Code  
[http://www.oie.int/eng/normes/mcode/A\\_summry.htm](http://www.oie.int/eng/normes/mcode/A_summry.htm)
- USAHA Foreign Animal Diseases book  
[http://www.vet.uga.edu/vpp/gray\\_book/FAD/](http://www.vet.uga.edu/vpp/gray_book/FAD/)

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