What it is:

Rift Valley Fever (RVF) is a serious zoonotic viral disease primarily transmitted by vectors such as mosquitoes. It mainly affects ruminants but can also be transmitted to humans either through direct contact with infected animals, or via bites from vector mosquitoes. This disease poses a **significant threat to both animals and humans**, leading to **serious economic and social impacts** in affected regions.

It is caused by an RNA virus belonging to the *Phenuiviridae* family, genus *Phlebovirus*, and is primarily transmitted by *Culex* and *Aedes* mosquitoes.

Among arboviral diseases, RVF is one of the most important zoonoses, with a high potential for global spread.

It is currently present in countries neighbouring Europe, representing a threat to both public and veterinary health.

Categories

The primary amplifying hosts of the virus are **domestic ruminants**, particularly **sheep, cattle, goats, and camelids** (camels and dromedaries).

Some wild animals - such as **rodents, wild ruminants,** and **bats**, may contribute to the persistence of the virus during inter-epizootic periods, acting as reservoirs of infection.

Several mosquito species, especially *Aedes* and *Culex* spp., can **transmit the virus to animals and humans**. Furthermore, vertical transmission has been observed in some *Aedes* species.

Origin and Transmission

Rift Valley Fever is a disease that **originated in East-Central Africa** and **later spread throughout sub-Saharan Africa**. More recently, its distribution has expanded into **North Africa and the Arabian Peninsula,** making it a **threat of both regional and global concern**.

Human transmission occurs both **indirectly, through arthropod vector bites**, primarily *Aedes* and *Culex* mosquitoes, and **directly, through contact with body fluids, carcasses, and organs of infected animals**, especially during veterinary procedures and slaughtering activities. To date, **no human-to-human transmission has been documented.**

In North Africa, climatic conditions favour the survival and abundance of vectors, particularly in the summer and autumn. In other regions of Africa, as well as in Saudi Arabia and Yemen, outbreaks are generally associated with periods of heavy rainfall, such as those linked to the “El Niño” phenomenon.

Symptoms and Impact

ANIMALS	HUMANS
Clinical signs of RVF vary depending on the species involved and the age of the animal. **Lambs and young goats are the most susceptible**, with mortality rates reaching 70–100%, followed by **sheep and calves**, which show mortality rates of 20–70%. Moderately susceptible species such as **goats and buffaloes** show lower mortality rates (<10%), while other animals, including **camelids, may become infected without developing symptoms.** A hallmark of RVF outbreaks is the **sudden onset of widespread abortions**, the so-called "abortion storm," characterized by an 80–100% abortion rate in sheep, **high mortality in young animals, and often accompanied by human cases.**	In humans, RVF is **often asymptomatic or presents with flu-like symptoms** such as fever, weakness, and dizziness, typically resolving within 2–7 days without treatment. However, in 8–10% of cases, the disease **may lead to severe complications, including ocular disease**, encephalitis, and hemorrhagic syndromes, with bleeding from gums, nose, and injection sites, as well as jaundice and vomiting blood. **The mortality rate is approximately 1%.** Those at **highest risk** include individuals who handle blood, infected tissues, or animal carcasses, such as **veterinarians and laboratory personnel**. Milk or colostrum may also serve as a possible transmission route.

Geographical Distribution

RVF is endemic in sub-Saharan Africa and Madagascar, but has also caused outbreaks in **North Africa.** The **first major outbreak outside sub-Saharan Africa occurred in 1977 in Egypt**, where the disease caused numerous human cases and severe economic losses. Since then, **the virus has been detected in Egypt, Senegal, and Mauritania**.

In Libya, outbreaks occurred in 2020 and 2021, while the most recent outbreak in Mauritania in 2022 resulted in 47 human cases and 23 deaths. Although not officially reported in **Algeria, Morocco**, or **Tunisia**, some seroprevalence studies suggest a possible presence of the virus. To date, **no outbreaks have been reported in Europe.**

Preventive Measures

Prevention of RVF in animals is based on **vaccination with either live attenuated or inactivated virus vaccines**.
Additionally, **restricting or prohibiting livestock movement** is effective in slowing the spread of the virus from infected to uninfected areas.

An inactivated vaccine has been developed **for humans**, but it is not currently available on the market. No specific treatment is available, although most cases are mild and self-limiting.
For severe cases, early supportive and symptomatic treatment is required.

To reduce the risk of infection in humans, it is essential to **adopt protective measures against mosquito bites**, such as using insect repellents, wearing light-coloured and covering clothing, and avoiding outdoor activities during peak mosquito activity hours. It is also important to **implement good practices in animal husbandry** and slaughtering, including the use of personal protective equipment. Additionally, ensuring that animal-origin products are properly cooked is critical.

To control vectors in high-risk areas, impregnated mosquito nets, repellents, and larvicides can be employed.

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References:

- *ECDC, Facts about Rift Valley fever*
https://www.ecdc.europa.eu/en/rift-valley-fever/facts

- *EFSA Panel on Animal Health and Welfare (AHAW);*
Scientific Opinion on Rift Valley fever. EFSAJournal 2013;11(4):3180. [48 pp.] doi:10.2903/j.efsa.2013.3180.
Available online: https://www.efsa.europa.eu/en/efsajournal/pub/3180

- *Italian Ministry of Health – Rift Valley Fever*
https://www.pnrr.salute.gov.it/portale/malattieInfettive/dettaglioSchedeMalattieInfettive.jsp?lingua=italiano&id=225&area=Malattie%20infettive&menu=indiceAZ&tab=1

- *WHO, Rift Valley Fever*
https://www.who.int/news-room/fact-sheets/detail/rift-valley-fever#:~:text=Rift%20Valley%20fever%20is%20a,member%20of%20the%20Phlebovirus%20genus.

- *WOAH, Fact sheets on Rift Valley Fever*
https://www.woah.org/en/disease/rift-valley-fever/