Rabbit Hemorrhagic Disease Virus Type 2 (RHDV2)

What is Rabbit Hemorrhagic Disease?

Rabbit hemorrhagic disease (RHD) is an emerging wildlife disease caused by rabbit hemorrhagic disease virus type 2 (RHDV2). The disease is highly infectious and has a high mortality rate. RHDV2 affects lagomorphs, members of the Order Lagomorpha, which includes domestic and wild rabbits, pikas, and hares. Susceptible native Tennessee wildlife species include the Eastern Cottontail, Appalachian Cottontail, and Swamp Rabbit. Currently, RHDV2 has not been documented to affect humans or any other animal species.

RHDV2 has an incubation period of 3-9 days. It attacks the liver cells and causes hepatitis. Wild rabbits infected with RHDV2 are often found dead with bleeding from the nose and mouth. RHD usually results in death within 4-6 days after exposure and often the only sign of the disease is sudden death. Infected animals which live longer or survive the disease may develop respiratory and neurological symptoms, fever, lethargy, and a decreased appetite and can shed the virus for 30 days.

Caution should be taken when handling rabbits that are suspected to have died from RHD as the clinical signs are the same as tularemia (rabbit fever) which can cause disease in people.

How is RHDV2 Spread?

RHDV2 can be found in feces, urine, and respiratory secretions of infected animals and can be passed to uninfected animals either through direct or indirect contact. The virus can survive in the environment for 3-4 months and can be passed indirectly to uninfected animals through contaminated food, bedding, water, and carcasses. Scavengers, like birds or insects, may act as vectors transmit the virus to new areas. People may also unintentionally spread the virus on our hands, clothes, and shoes or by moving live or dead rabbits.

Distribution of RHDV2 Outbreak in the US

RHDV2 was first detected in France in 2010 and was found in North America in a wild rabbit in April 2020. It has since been confirmed in wild lagomorphs and/or domestic rabbits in 17 states. A stable-endemic area of RHDV2 exists in Texas and much of the contiguous western United States. In these states, RHDV2 has been documented in domestic rabbits and wild lagomorphs. Outside of the endemic area, domestic cases have been confirmed in Florida, Georgia, Kentucky, Mississippi, Minnesota, and South Dakota. **In January of 2022, RHDV2 was detected in two domestic rabbits in east Tennessee. Although RHDV2 has not yet been found in Tennessee's wild rabbit populations, the virus is still of concern due to its high infectious and mortality rates.**

The USDA conducted genetic sequencing of RHDV2 in domestic rabbits in Florida and Georgia and found the viruses may be connected to the western outbreak rather than from new introductions. This suggests a risk of movement of RHDV2 across the landscape.

To view an interactive map of the current outbreak, visit the United States Department of Agriculture (USDA) website at www.aphis.usda.gov/aphis/maps/animal-health/rhd.

If you find dead wild rabbits, contact your nearest Tennessee Wildlife Resources Agency regional office. Visit tnwildlife.org for office information.

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Preventative Measures

The following preventative measures are recommended for hunters and rabbit owners to limit exposure and spread of RHDV2:

Hunters & Falconers

- Avoid harvesting rabbits that appear sick.
- When processing rabbit wear disposable gloves.
- Disinfect equipment and wash hands.
- Prepare meat to an internal temperature of at least 165°F.
- Bury rabbit remains to discourage scavenging.

Rabbit Owners

- Keep rabbits indoors or keep rabbit enclosures raised and off the ground.
- Wash hands, clothes, and shoes before and after contact with domestic rabbits.
- Do not handle dead or wild rabbits.
- Quarantine new domestic rabbits for at least 30 days from other animals.
- Notify the State Veterinarian's office if you experience sudden deaths or high mortality in your rabbitry at (615) 837-5120 or animal.health@tn.gov.

Eastern Cottontail, photo by John White.

Appalachian Cottontail, photo by Ashley Jensen.

Swamp Rabbit, photo by Scott Somershoe

RHDV2 Vaccine

A vaccine for RHDV2 to be used in domestic rabbits is now available in over 40 states including Tennessee. The vaccine was produced by Medgene Labs and was granted Emergency Use Authorization by the USDA Center for Veterinary Biologics in October of 2021. The vaccine has been effective in preventing severe and fatal disease from RHDV2 infection in domestic rabbits but is meant as a supplement to the above preventative measures.

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References

- Abrantes, Joana, et al. "Rabbit haemorrhagic disease (RHD) and rabbit haemorrhagic disease virus (RHDV): a review." *Veterinary research* 43.1 (2012): 1-19.
- Carvalho, C. L., et al. "Tracking the origin of a rabbit Haemorrhagic virus 2 outbreak in a wild rabbit breeding Centre in Portugal; epidemiological and genetic investigation." *Journal of Emerging Infectious Diseases* 1.4 (2016).
- Dalton, Kevin Paul, et al. "Complete genome sequence of two rabbit hemorrhagic disease virus variant b isolates detected on the Iberian Peninsula." *Archives of virology* 160.3 (2015): 877-881.
- Gall, Le. "Detection of a new variant of rabbit haemorrhagic disease virus in France." *Veterinary Record* (2011).
- Hall, Robyn N., et al. "Passive Immunisation against RHDV2 Induces Protection against Disease but Not Infection." *Vaccines* 9.10 (2021): 1197.
- Rouco, Carlos, et al. "Worldwide rapid spread of the novel rabbit haemorrhagic disease virus (GI. 2/RHDV2/b)." *Transboundary and emerging diseases* 66.4 (2019): 1762-1764.
- SCWDS Briefs. A Quarterly Newsletter from the Southeastern Cooperative Wildlife Disease Study College of Veterinary Medicine. The University of Georgia 37.3 (2021).
- Spickler, Anna Rovid. 2016. *Rabbit Hemorrhagic Disease*. Retrieved from http://www.cfsph.iastate.edu/DiseaseInfo/ fact-sheets.php.

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