



Clinical signs for hemorrhagic disease are most often found in white-tailed deer.

Hemorrhagic disease in deer: clinical signs and diagnostic testing



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Hemorrhagic disease is a viral disease caused by either the epizootic hemorrhagic disease virus or the bluetongue virus. These viruses are closely related, but produce distinct antibodies.

In North America, hemorrhagic disease is seen primarily among white-tailed deer and occasionally in mule deer, black-tailed deer, elk, pronghorn antelope and bighorn sheep. Wild deer as well as pen-raised deer are susceptible. Cattle and sheep are occasionally affected with varying severity.

The clinical disease produced by the two viruses is indistinguishable.

Thus, the term “hemorrhagic disease” is often used when the specific virus has not yet been identified.

Clinical signs

Three forms of clinical disease are recognized:

- Peracute—affected deer develop high fever, weakness, difficult breathing and swelling of the head and eyelids. Death may occur within eight to 36 hours with few symptoms.
- Acute – Extensive hemorrhages in the skins, heart, gastrointestinal

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About TVMDL: The Texas A&M Veterinary Medical Diagnostic Laboratory protects animal and human health through diagnostics.

An agency of the Texas A&M University System, TVMDL comprises two full-service laboratories, in College Station and Amarillo, and two poultry laboratories, in Center and Gonzales.

TVMDL is among 12 core laboratories in the National Animal Health Laboratory Network, a group of state and regional laboratories designed to provide a nationwide surge testing, response, and recovery capacity in the event of an animal disease outbreak.

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tract and other tissues, plus excessive salivation and nasal discharge, sometimes tinged with blood; in some cases, ulcers of the mouth or tongue may develop. Mortality is high among deer with this form.

• **Chronic** – Breaks or rings in the hooves caused by interruptions in growth, which may result in lameness; ulcers, scars or erosions in the rumen, which may lead to emaciation. Deer with the chronic form are ill for several weeks, but may gradually recover.

Affected deer are drawn to streams, lakes, ponds and other water sources as they seek relief from high fever and dehydration.

Transmission

Hemorrhagic disease does not spread directly from deer to deer, but depends on a biological vector for transmission.

Both the epizootic hemorrhagic disease virus and the bluetongue virus are transmitted by *Culicoides*, a genus of insects that includes biting midges and no-see-ums. The most commonly incriminated species is *C. variipennis*, a biting midge found in moist areas and low wetlands.

Midges breed in moist, muddy areas. The recent Texas drought

has provided welcoming habitats for midges, creating muddy areas along streams and ponds.

The disease is seasonal, occurring from late summer into fall. The first good frost or freeze will usually result in an abrupt end to an outbreak, as winter weather will halt *Culicoides* activity.

Neither virus is transmissible to humans.

Diagnosis

An accurate diagnosis for hemorrhagic disease requires a case history, clinical signs, samples of gross and microscopic lesions, and laboratory tests. These are also needed to determine which virus is responsible for the disease.

TVMDL offers two diagnostic tests for hemorrhagic disease.

One is a real-time polymerase chain reaction test (or qPCR) that will test for both epizootic hemorrhagic disease virus and bluetongue virus from a single specimen. This test requires whole blood in EDTA or highly vascularized tissue such as a spleen.

The other is a virus isolation test that may be conducted on whole blood or fresh tissue.

Producers and animal owners should consult their veterinarians for diagnosis and treatment.