

Pennsylvania Department of Agriculture
Bureau of Animal Health and Diagnostic Services
Protocol for Regulatory Response to a Suspect Case of the Neurologic Form of
EHV-1

EHV-1 is a highly contagious virus that is ubiquitous in equine populations worldwide. The age, seasonal, and geographic distributions vary and are likely determined by immune status and concentration of equines. Infection with EHV-1 most commonly causes respiratory illness, characterized by fever, rhinopharyngitis and tracheobronchitis. Infection may also cause abortions in pregnant mares, following clinical or sub-clinical infection, and can be fatal to newborn foals. A further, infrequent clinical resultant effect of EHV-1 infection is the development of neurologic disease. Depending upon the location and extent of the lesions, signs of neurologic disease may vary from mild incoordination and posterior paresis to severe posterior paralysis with recumbency, loss of bladder and tail function, and loss of sensation to the skin in the perineal and inguinal areas, and even the hindlimbs. In exceptional cases, the paralysis may be progressive and culminate in quadriplegia and death.

Transmission of EHV-1 occurs by direct or indirect contact with infective nasal discharges, aborted fetuses, placentas, or placental fluids. Transmission can occur via aerosolized virus generated by coughing or blowing, as well as by direct contact with infected horses, feed, and equipment.

There is currently no known method to reliably prevent the neurologic form of EHV-1 infection. Sound management practices, including isolation, are important to reduce the risk of infection with EHV-1. Maintaining appropriate vaccination protocols may also be prudent in an attempt to reduce the incidence of the respiratory form of EHV-1 infection, which may reduce the incidence of the neurologic form.

The Pennsylvania Secretary of Agriculture has declared the neurologic form of EHV-1 infection a dangerous transmissible disease in Pennsylvania. Therefore, the State Veterinarian has regulatory authority to carry out procedures to reduce the risk of disease spread and to contain and eradicate the disease.

Quarantine:

In response to a report from a licensed veterinarian regarding a suspect case of the neurologic form of EHV-1 in Pennsylvania, the Bureau of Animal Health and Diagnostic Services may place a quarantine on the premises on which the animal is located. At the discretion of the Bureau; if the equine has been contained exclusively to one barn, and any equines which were potentially exposed to that equine since it began showing clinical symptoms have been contained exclusively to that barn, the quarantine may be limited to that barn. Clinical symptoms include fever, cough, nasal discharge, and/or neurological signs. At the discretion of the Bureau, a facility may be permitted to self-quarantine if the facility can ensure that it will maintain an acceptable level of biosecurity and can provide monitoring of animals by trained personnel (veterinary facilities, racetracks, etc).

Release of Quarantine:

1. The quarantine will be in effect for 21 days past the onset of the most recent case of relevant clinical signs in an animal on the premises or barn (fever, nasal discharge or neurological signs). At the end of 21 days without clinical signs, the clinical status of each of the animals on the quarantined premises or barn shall be evaluated and certified by a state official or designated accredited veterinarian.

AND

2. Following the 21-day period without relevant clinical signs, a premises or barn under quarantine must test off quarantine by demonstration of negative laboratory tests for EHV-1. Testing for quarantine release is described below. Samples shall be collected by a state official or designated accredited veterinarian. Individual equines shall not be released from a quarantined premises or barn until all equines present on the premises or barn satisfy these *two* criteria for release of quarantine.

Testing for Quarantine Release:

PCR may be used to verify the absence of EHV-1 in both nasal secretions and whole blood buffy coat (white blood cells) 21 days after the onset of the most recent clinical case.

- **For quarantine release, an animal must be PCR test negative on both blood (buffy coat) and a nasal swab.**
- For buffy coat testing, at least 15-ml of EDTA-containing venous blood must be submitted for PCR testing. Samples must be kept chilled (refrigerated) and must be submitted in EDTA no later than 2 days after collection. The presence of viral DNA in the blood indicates that the equine is currently or has recently been viremic.
- For nasal swabs, dry swabs are preferred at the Pennsylvania Veterinary Laboratory (PVL). Calcium alginate swabs should be avoided. Cotton or polyester swabs with plastic shaft are acceptable. Wooden shafts should be avoided. For dry nasal swabs, samples can be submitted in a red top tube. Swabs in viral transport media (VTM) are also accepted.
- A negative PCR test on a nasal swab indicates that the animal is not presently able to transmit the virus to other animals. Combined with a negative PCR blood test, this indicates that the animal is not currently shedding virus and is not likely to shed virus in the future as a result of this exposure.
- Negative test results must be considered in conjunction with a 21-day absence of relevant clinical signs.
- If positive results are obtained from blood samples *or* nasal swab samples, the quarantine is continued for an additional 21 days, when the animals are tested again. Positive samples may be forwarded upon owner request to the University of Kentucky for typing. If the positive samples are typed as EHV-1 respiratory type, the quarantine will be released in the absence of relevant clinical signs. If they are typed as EHV-1 neurologic type, the quarantine is continued.

- **OPTIONAL:** If on the 21-day test positive results for EHV-1 neurologic type are obtained on blood samples (but nasal swabs test negative), these PCR blood-positive animals may be moved to a different isolation facility. One week later, retest the PCR-negative animals that remain in the original quarantine group (blood and nasal swabs). If all test negative, and there are no relevant clinical signs, they may be released from quarantine. If any of these animals tests positive for EHV-1 neurologic type on blood (but nasal swabs test negative), move the positive animal to the smaller isolation group. Retest the original group after another week (blood and nasal swabs) and release from quarantine if all are PCR negative on blood and nasal swabs with no relevant clinical signs. (If any animal tests positive for EHV-1 neurologic type on a nasal swab, the quarantine continues for another 21 days). Continue to test the animals in the smaller isolation group (blood and nasal swabs) at 21-day intervals until all of these animals also test negative on blood and nasal swabs with no relevant clinical signs.

For Veterinarians -- Sample Submission:

- For PCR analysis: Pennsylvania Veterinary Laboratory; 717-787-8808
- For PCR analysis with typing (differentiation between respiratory and neurologic types): University of Kentucky Livestock Disease Diagnostic Center (Dr. Lenn Harrison); Phone; 859-253-0571 Fax; 859-255-1624

Shipping address: University of Kentucky
Livestock Disease Diagnostic Center
1490 Bull Lea Road
Lexington, KY 40511

Testing Costs:

For quarantine release testing, the owner will not be charged for PCR testing at PVL. If samples are sent to the University of Kentucky, owners are responsible for payment for testing. Owners will not be charged for the cost of shipping of samples from PVL to Kentucky.

Routine EHV-1 Testing cost at PVL:
EHV-1 PCR \$25