

Update on Equine Encephalitis Viruses Equine Herpes Virus, West Nile Virus, and Rabies

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Suspected cases of any type of viral encephalitis in horses are reportable to the State Veterinarian (303.239.4161)

Due to the spread of skunk rabies in Colorado, the continued transmission of West Nile virus to horses, and reports of severe neurologic cases of EHV-1 in Colorado and the U.S., the Colorado Department of Agriculture and the Colorado Department of Health & Environment are providing this update on these diseases to veterinarians in Colorado.

Equine Herpes Virus (EHV)

Equine herpesvirus is a common DNA virus that occurs in horse populations worldwide. The two most common strains are EHV-1, which causes abortion, respiratory disease, and neurologic disease; and EHV-4, which usually causes respiratory disease only but can occasionally cause abortion. The neurological form of EHV is a reportable disease in Colorado.

Equine herpesvirus myeloencephalopathy (EHM) is another name for the neurological form of the disease that is associated with Equine Herpes Virus (EHV). This strain called EHV-1 causes pathological changes to the blood vessels of the brain and spinal cord which then results in functional changes to the central nervous system and neurological clinical signs.

Across the country, there has been an increase in EHV-1 cases including some outbreaks where large numbers of horses are gathered like at racetracks, shows, stables, and even veterinary clinics. It is spread through aerosol transmission and can be transmitted by fomites such as tack, feed containers, people, and other physical objects. The incubation period can be less than 24 hours but is typically 4-6 days. Diagnostic testing can be done at the Colorado State University Diagnostic Laboratory (970.297.1281). It may be accomplished through virus isolation, PCR, and/or serology.

Rabies

As skunk rabies spreads from the eastern plains of Colorado towards the Front Range areas, the risk of rabies infection in livestock is increasing. In September, a horse in north-central El Paso County tested positive for rabies and a cow near Calhan also tested positive for rabies. Owners of horses and other livestock are encouraged to consult with their veterinarians on the cost of rabies vaccine for their animals or herd and the level of risk in their area. Please visit the CDPHE website for updated statistics and maps: <http://www.cdphe.state.co.us/dc/zoonosis/rabies/index.html>.

Clinically, it is difficult to differentiate rabies from infection from an acute equine encephalitis virus such as West Nile virus (WNV) and Western Equine Encephalitis

(WEE). DFA testing of livestock for rabies is available through CSU Veterinary Diagnostic Laboratory (CSUVDL). The Colorado Department of Public Health and Environment (CDPHE) Laboratory also provides rabies testing for a fee, but can **only accept the extracted brain of livestock**, as the CDPHE lab is not equipped for brain extraction from large livestock (adult horses, cattle). Please submit heads to CSUVDL on such animals when possible. However, if the brain is already extracted, CDPHE is happy to perform the testing. At this time, CDPHE has limited state general funds for rabies testing which can only be utilized if the risk of rabies infection of the livestock is elevated, as determined by CDPHE (e.g., possible exposure to skunk, fox, or other carnivore in previous six months) **AND** if the owner cannot afford testing.

West Nile Virus

While the mosquito season will be ending soon for the year in Colorado, recently 15 equine cases of WNV have been reported in Colorado. Every spring, please remind your clients the importance of vaccination of their horses for both WEE and WNV. In addition, please consider WNV and other arboviral encephalitides in your differentials of equine neurological diseases.

The CDPHE coordinates surveillance for WNV in Colorado. Surveillance includes testing of human and equine specimens, mosquitoes, dead birds, and occasionally other animal species such as camelids and tree squirrels. In response to WNV positive horses in areas with previously no known recent WNV activity for the season, county environmental health officials may respond with alerting the community to take personal precautions (e.g., wearing insect repellent/long sleeves), increasing surveillance in the area (e.g., mosquito trapping) and possibly mosquito abatement steps (alert public to reduce backyard sources of mosquito breeding, reduction of standing water, larvaciding, and only when indicated and funding is available, pesticide application for adult mosquito control).

If arboviral testing is indicated in any of your equine patients, please send a serum sample to either CSUVDL or the Rocky Mountain Animal Health Laboratory (RMAHL). Submission forms and guidance are available from CSU at <http://www.dlab.colostate.edu> (970.297.1281) and RMAHL at <http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1175705256270> (303.477.0049). Call the State Veterinarian's Office (303.269.4161) or CDPHE (303.692.2700) for an *Equine CNS Case Tracking Form* to be faxed/mailed to you. If rabies is suspected, the serum sample may be included with the head or brain when it is submitted to the CSUVDL.

Since no vaccination is 100 percent effective, please consider WNV as a differential diagnosis even if the horse is currently vaccinated. Horses currently vaccinated for WNV may still become clinically ill due to WNV infection, but are less likely to develop severe illness or death due to WNV. The case definition for WNV in horses is as follows:

1. compatible clinical signs and positive IgM-capture ELISA at 1:400; or
2. compatible clinical signs and the demonstration of WNV DNA through either Polymerase Chain Reaction (PCR) testing of tissue samples; or immunohistochemistry testing of tissues

If you have any questions, please call the Office of the State Veterinarian at 303.269.4161 or the State Public Health Veterinarian at 303.692.2700. For further information about WNV and rabies, visit the following websites:

CDA RMAHL Submission Form for WNV Testing:

www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1176829199396

CSU VDL: <http://www.dlab.colostate.edu>

USDA APHIS VS: <http://www.aphis.usda.gov/vs/nahss/equine>

CDPHE: <http://www.cdphe.state.co.us/dc/zoonosis>

CDA: <http://www.colorado.gov/ag/animals>

CDC: <http://www.cdc.gov/ncidod/dvbid/westnile>

AVMA educational brochures:

http://www.avma.org/animal_health/brochures/horse_owners.asp