

Summary of Neurologic EHV-1 Outbreaks, January 1–June 30, 2007

Outbreaks of the neurologic form of equine herpesvirus-1 (EHV-1) occurred at various equine facilities in the United States in the first 6 months of 2007, including at racetracks, horse show grounds, veterinary clinics and boarding stables. Clinical cases of EHV-1 with neurologic signs are also referred to as equine herpesvirus myeloencephalopathy (EHM).

From January 1 through June 30, 2007, outbreaks of neurologic EHV-1 were reported in California, Connecticut, Maine, Minnesota, New York, Virginia, and Wisconsin. Maryland placed quarantines related to trace outs from the Virginia outbreak. Additional information about neurologic EHV-1 outbreaks in the United States is available at the following USDA APHIS websites:

- 1) <http://www.aphis.usda.gov/vs/nahss/equine/ehv/index.htm>.
- 2) http://www.aphis.usda.gov/vs/ceah/cei/taf/emergingdis/easenotice_files/notices.htm.

Before summarizing the occurrence of neurologic EHV-1 in the first 6 months of 2007, the following brief overview provides background information on the occurrences of EHM from 2006 leading into 2007.

One of five horses imported from Germany in November, 2006, and shipped to Florida, was the index case for an outbreak that resulted in 13 horses being identified as infected, with neurologic signs in seven of these cases and six associated deaths. Ten Florida premises were quarantined. The initial shipment from Germany included 15 horses; one horse in the original group from Germany was subsequently shipped to California and died shortly after arrival due to the neurologic form of EHV-1. The exposed horses were identified, and the horses that were shipped to other states were quarantined and monitored for EHV-1 signs; none were found. All quarantines related to this outbreak have been released.

Sources:

- 1) *Equine Herpes Virus Update* by Veterinary Services, December 29, 2006. http://www.aphis.usda.gov/vs/nahss/equine/ehv/2006_evh_122906.htm. Accessed May 30, 2007.
- 2) *Equine Herpes Virus Myeloencephalopathy: A Potentially Emerging Disease*. Published by USDA APHIS, January 2007. http://www.aphis.usda.gov/vs/ceah/cei/taf/emergingdis/easenotice_files/ehv.pdf. Accessed May 30, 2007.

Outbreaks of neurologic EHV-1, unassociated with the November 2006 shipment from Germany, continue to be identified in 2007.

California

Northern California—January

Due to potential exposure to an index case at Golden Gate Fields, three racetracks—Golden Gate Fields, Bay Meadows, and Pleasanton—within 30 miles of one another in northern California were quarantined by California racing officials on December 29, 2006. A 3-year-old Thoroughbred at Golden Gate Fields developed neurologic signs on December 28 after a workout, was admitted to the University of California at Davis, and was confirmed positive for EHV-1 on December 29. Approximately 2,100 horses were involved in the quarantines. Six other horses from the same barn and trainer as the index horse were tested for EHV with negative results. The quarantines were released in January 2007.

Sources:

- 1) The Horse.com Web site. December 31, 2006. Article #8559. EHV-1 update: Golden gate horse positive; quarantine issued. <http://thehorse.com/PrintArticle.aspx?ID=8559>. Accessed January 3, 2007.
- 2) USA Today Web site. December 30, 2007. Three Calif. racetracks hit with equine herpes quarantine. http://www.usatoday.com/sports/horses/2006-12-30-calif-quarantine_x.htm. Accessed May 8, 2007.
- 3) The Chronicle of the Horse Web site [subscription]. January 2, 2007. EHV-1 outbreak persists in Florida and affects California and Connecticut. <http://www.chronofhorse.com/index.php?cat=40511032791602&NewsID=1210201070844645>. Accessed January 3, 2007.

Southern California—January

A separate outbreak of EHV-1 occurred in southern California in early January and was confined to one barn at Los Alamitos Race Track. One horse showed clinical signs compatible with EHM at Los Alamitos and four other horses in the same barn had fevers. The neurogenic variant of equine herpesvirus was identified.

On January 30, the California Horse Racing Board announced that two horses died on January 27 at Los Alamitos Race Course. The horses were confirmed EHV-1 positive, and two barns were placed under quarantine by California racing officials. Quarantine measures were established on January 28 and have since been released.

Sources:

- 1) The Horse.com Web site. January 17, 2007. Article #8703. California vets provide update, offer prevention advice. <<http://www.thehorse.com/PrintArticle.aspx?ID=8703>>. Accessed May 15, 2007.
- 2) The Horse.com Web site. January 30, 2007. Article #8795. Two Los Alamitos horse deaths attributed to EHV-1. <<http://www.thehorse.com/PrintArticle.aspx?ID=8795>>. Accessed May 15, 2007.
- 3) USA Today Web site. January 30, 2007. Two California horses die from equine herpes virus. <http://www.usatoday.com/sports/horses/2007-01-30-horse-herpes_x.htm>. Accessed May 8, 2007.
- 4) *Board Moves to Enforce Ban on Long Toe Grabs*, California Horse Racing Board news release of February 23, 2007, accessed on May 31 at <http://www.chrb.ca.gov/press_releases/2007_02_23_press_release.pdf>.

San Mateo County, California—March

A third California outbreak occurred when six horses were diagnosed with the neurogenic variant of EHV-1 in March in San Mateo County and three stables were quarantined.

On March 6, a horse at a boarding facility in Montara began exhibiting signs consistent with EHM. The horse was febrile and showed signs of ataxia on the evening of March 11, and was recumbent the following morning. Also on March 11, a second horse that had been in the same paddock as the first horse became ataxic. After a private practitioner examined the horses and obtained diagnostic samples, the horses were sent to UC-Davis for treatment. EHV-1 was confirmed by diagnostics on blood, nasal swabs and spinal taps. After a lack of response to treatment, both horses were euthanized.

Subsequently, two additional horses from the same facility became febrile; one horse tested positive for the neurogenic variant of the virus, the other was negative. The positive horse had been on a trail ride the previous day with a horse from a second, nearby facility.

On March 15, a horse on a third facility was euthanized after becoming recumbent. Subsequent post-mortem testing resulted identified the neurogenic variant of EHV-1. A second horse at this same facility became febrile and was also confirmed positive for the neurogenic variant after testing.

Sources:

- 1) San Joaquin Sierra Web site, publication of San Joaquin Sierra Unit, Backcountry Horsemen of California. April/May 2007, p. 15. Update: EHV-1 in San Mateo County. <<http://www.bchc.org/SJSU%20NEWS%20LETTERS/SJSU%20NLApril-May%2007.pdf>>. Accessed May 15, 2007.
- 2) California State Horsemen's Association Web site. March 25, 2007. Horse stables under quarantine for

mysterious virus. <<http://www.californiastatehorsemen.com/announcements.htm>>. Accessed May 15, 2007.

- 3) The Horse.com Web site. March 19, 2007. Article #9156. Herpesvirus: two California horses euthanized. <<http://www.thehorse.com/PrintArticle.aspx?ID=9156>>. Accessed May 15, 2007.
- 4) The Horse.com Web site. March 20, 2007. Article #9165. California equine herpesvirus update. <<http://www.thehorse.com/PrintArticle.aspx?ID=9165>>. Accessed May 15, 2007.
- 5) The Horse.com Web site. March 25, 2007. Article #9209. Equine herpesvirus: California cases cause quarantines, cancellations. Accessed May 15, 2007. <<http://www.thehorse.com/PrintArticle.aspx?ID=9209>>. Accessed May 15, 2007.

Connecticut

The University of Connecticut, in collaboration with the Connecticut Department of Agriculture, quarantined its 80-horse herd in January after a horse was confirmed positive for EHV-1. Of the 23 horses that exhibited clinical signs, 5 developed EHM. The quarantine was lifted March 5. The source of the infection is unknown.

Sources:

- 1) The Horse.com Web site. January 9, 2007. Article #8645. <<http://www.thehorse.com/PrintArticle.aspx?ID=8645>>. Accessed January 10, 2007.
- 2) University of Connecticut news Web site. 2007 January 9. U Conn horses quarantined. Press release. <<http://www.news.uconn.edu/2007/January/re107001.html>>. Accessed May 7, 2007.
- 3) University of Connecticut news Web site. 2007 January 18. Update on horse illness. Press release. <<http://news.uconn.edu/2007/January/re107002.html>>. Accessed May 7, 2007.
- 4) The Horse.com Web site. January 19, 2007. Article #8716. Herpesvirus: 21 University of Connecticut horses showing clinical signs. <<http://www.thehorse.com/PrintArticle.aspx?ID=8716>>. Accessed January 22, 2007.
- 5) University of Connecticut, College of Agriculture and Natural Resources, Department of Animal Science Web site. March 6, 2007. U Conn EHV-1 outbreak press release. <<http://www.canr.uconn.edu/ansci/ehv.htm>>. Accessed May 7, 2007.
- 6) The Horse.com Web site. March 6, 2007. Article #9084. Herpesvirus: University of Connecticut quarantine lifted. <<http://www.thehorse.com/PrintArticle.aspx?ID=9084>>. Accessed March 7, 2007.

Maine

An outbreak of EHV-1 was confirmed in Maine on March 28, after one horse died on March 18 and another was euthanized on March 19. Both horses developed neurologic signs while stabled at a private facility in Rome, Maine. A third horse, an 8-year old mare that had been stabled briefly at the Rome facility and was then

stabled at a facility in Wales, Maine, also developed neurologic signs and was confirmed positive for EHV-1 on nasal swab and blood samples. The Rome and Wales facilities were both placed under quarantine by the Maine Department of Agriculture; the quarantines have since been released.

Sources:

- 1) The Horse.com Web site. March 29, 2007. Article #9278. Equine herpesvirus confirmed in Maine. <<http://www.thehorse.com/PrintArticle.aspx?ID=9278>>. Accessed April 2, 2007.
- 2) Maine Government News Web site (official Web site of the State of Maine). March 29, 2007. Equine herpes virus type 1 (EHV-1) confirmed in Maine. <<http://www.maine.gov/tools/whatsnew/index.php?topic=Portal+News&id=35852&v=article-2006>>. Accessed April 2, 2007.
- 3) Foster's Online Web site. March 30, 2007. Horse disease spotted for first time in Maine. <<http://www.fosters.com/apps/pbcs.dll/article?AID=/20070330/NEWS0104/70330043/-1/NEWS24>>. Accessed April 2, 2007.
- 4) Morning Sentinel Web site. March 30, 2007. Outbreak of horse virus leads to call for quarantine. <<http://morningsentinel.maintoday.com/news/local/3763569.html>>. Accessed March 30, 2007.
- 5) Bangor Daily News Web site. March 31, 2007. Veterinarian stresses equine virus alert. <<http://www.bangordailynews.com/news/t/default.aspx?a=148151&template=print-article.htm>>. Accessed April 2, 2007.

Minnesota

On February 21, the Minnesota Board of Animal Health—Equine Division announced that a case of EHV-1 was confirmed in Wright County. This was the first time that EHV-1 had been diagnosed in the state. The infected horse became ill on February 14, became recumbent and was euthanized. Blood and nasal swabs from the horse were tested at the University of Kentucky where the diagnosis of EHV-1 infection was confirmed.

Source:

- 1) Minnesota Board of Animal Health Web site <<http://www.bah.state.mn.us/diseases/ehv1/ehv1.html>>. Accessed March 6, 2007.

Wisconsin

On January 22, a horse (horse 1) on a farm in Jefferson County was diagnosed with EHV-1 by PCR testing of nasal swabs and blood. Based on these results, the farm voluntarily imposed quarantine measures and instituted twice-daily monitoring of body temperatures of all other horses on the premises. More than 50 horses were stabled at the farm. On January 23, the positive horse was confirmed to have the neurogenic variant of EHV-1.

Subsequently, nasal swabs and blood were collected from all horses on the premises and the samples were PCR-tested.

On the same day as the testing, three additional horses (horses 2, 3 and 4) exhibited elevated temperatures. All nasal swabs tested negative for EHV-1 but horse 2 from the elevated-temperatures group returned a positive blood test for EHV-1. The index case, horse 1, developed rear limb paralysis and became recumbent. The horse was euthanized 4 days post-diagnosis. Horse 2 underwent treatment which resulted in resolution of fever; no other clinical signs were observed. Horse 3, despite negative nasal swab and blood PCR testing, developed rear limb ataxia and bladder paralysis on the third day after testing. The horse became recumbent within 12 hours and was euthanized. A post-mortem PCR blood test returned negative for EHV-1. Horse 4's fever resolved within 36 hours and no clinical signs of either a respiratory or neurologic nature were observed.

No new respiratory or neurologic clinical signs have been observed in the resident horses since January 27, 2007. There is no known link between the Jefferson County EHV-1 cases and any other outbreaks.

Sources:

- 1) Wisconsin State Horse Council Web site. February 6, 2007. <http://www.wisconsinstatehorsecouncil.org/2007%20EHV1_NewsBrief.htm>. Accessed February 6, 2007.
- 2) The Horse.com Web site. February 6, 2007. Herpesvirus confirmed in Wisconsin horses; two euthanized. <<http://www.thehorse.com/PrintArticle.aspx?ID=8878>>. Accessed February 6, 2007.
- 3) The Horse.com Web site. February 6, 2007. Herpesvirus: Wisconsin cases not related to other outbreaks. <<http://www.thehorse.com/PrintArticle.aspx?ID=8888>>. Accessed February 6, 2007.
- 4) Wisconsin Department of Agriculture, Trade and Consumer Protection Web site. February 8, 2007. Herpes virus kills two Jefferson County horses. <http://www.datcp.state.wi.us/press_release/result.jsp?rid=1925>. Accessed May 10, 2007.

Virginia

The Marion duPont Scott Equine Medical Center reported an EHV-1 outbreak in February resulting in quarantine of the hospital and closure to new admissions. The State of Maryland instituted precautionary quarantines due to epidemiological links to the Marion duPont Scott Equine Medical Center.

On February 7, a horse (index horse) was admitted to the veterinary hospital for emergency colic treatment. The index horse subsequently developed a fever and exhibited neurologic signs consistent with EHM. The horse was immediately isolated in a BSL-2 isolation unit. A nasal swab obtained from the horse was PCR-tested for EHV-1 and a positive result was obtained.

After isolation of the index horse, other horses housed at the facility began to show clinical signs of disease. On February 20, two horses developed fevers and exhibited neurologic signs. State officials imposed a quarantine of all hospital facilities, effective February 20.

Eventually, in addition to duPont Scott Equine Medical Center, 10 private facilities were quarantined, involving 15 horses at duPont Scott and approximately 175 at the private facilities. The last quarantine was lifted March 28. Six EHV-1 cases were confirmed. No fatalities due to EHV-1 occurred during the outbreak.

1) Times Community News—Loudon County Local News Web site. February 20, 2007. Breaking news: EHV-1 positive shuts down Equine Medical Center.

<http://www.timescommunity.com/site/printerFriendly.cfm?brd=2553&dept_id=506035&newsid=17876167>. Accessed March 5, 2007.

2) The Chronicle of the Horse Web site [subscription]. February 20, 2007. Marion duPont Scott Equine Medical Center under quarantine for EHV-1.

<http://www.chronofhorse.com/index.php?cat=40511032791602&News_ID=1282102073924061>. Accessed May 7, 2007.

3) The Horse.com Web site. February 21, 2007. Article #8979. Leesburg, Va., Equine Medical Center under herpesvirus quarantine.

<<http://www.thehorse.com/PrintArticle.aspx?ID=8979>>. Accessed February 21, 2007.

4) The Horse.com Web site. February 21, 2007. Article #8978. Herpesvirus: six Virginia farms quarantined.

<<http://www.thehorse.com/PrintArticle.aspx?ID=8978>>. Accessed February 21, 2007.

5) Virginia Department of Agriculture and Consumer Services Web site. February 21, 2007. Update on equine herpes virus-1 in Virginia.

<<http://vdacs.state.va.us/news/releases-b/0222107ehv-advisory.shtml>>. Accessed February 27, 2007.

6) Virginia Department of Agriculture and Consumer Services Web site. February 21, 2007. Equine herpes virus-1 reported in Virginia; state veterinarian quarantining farms.

<<http://www.vdacs.vipnet.org/news/releases-b/022107equine.shtml>>. Accessed February 27, 2007.

7) Virginia Department of Agriculture and Consumer Services Web site. February 23, 2007. Update on equine herpes virus-1 in Virginia, additional facilities quarantines as a precaution.

<<http://www.vdacs.virginia.gov/news/releases-b/022307ehv-quarantine.shtml>>. Accessed February 27, 2007.

8) The Horse.com Web site. February 25, 2007. Article #9011. 3 Va. counties, Quantico added to horse quarantine.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9011>>. Accessed February 26, 2007.

9) The Horse.com Web site. February 27, 2007. Article #9022. Equine herpesvirus: Va. officials awaiting test results.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9022>>. Accessed February 28, 2007.

10) The Chronicle of the Horse Web site [subscription]. February 28, 2007. Loudon County horse tests positive for EHV-1.

<http://www.chronofhorse.com/index.php?cat=40511032791602&News_ID=1172802073398778>. Accessed February 28, 2007.

11) Virginia Polytechnic Institute and State University Web site. February 28, 2007. Update: four symptomatic horses in stable condition at equine medical center.

<http://www.vtnews.vt.edu/news_print/index.php?relyear=2007&itemno=100>. Accessed March 5, 2007.

12) The Horse.com Web site. March 1, 2007. Article #9060. Herpesvirus shuts down Virginia horse shows.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9060>>. Accessed March 1, 2007.

13) The Chronicle of the Horse Web site [subscription]. Horse euthanized at Marion duPont Equine Medical Center.

<http://www.chronofhorse.com/index.php?cat=40511032791602&News_ID=1210103071478824>. Accessed May 7, 2007.

14) The Horse.com Web site. March 5, 2007. Article #9072. Herpesvirus: sixth Virginia horse positive.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9072>>. Accessed March 5, 2007.

15) Virginia Polytechnic Institute and State University Web site. March 5, 2007. Marion duPont Equine Medical Center press release. Quarantine status report.

<<http://emc.vetmed.vt.edu/statusreport.html>>. Accessed March 5, 2007.

16) Virginia Department of Agriculture and Consumer Services Web site. March 8, 2007. Press release. State veterinarian begins releasing farms from quarantines due to equine herpes virus-1.

<<http://www.vdacs.virginia.gov/news/releases-b/030807ehv1-update.shtml>>. Accessed March 9, 2007.

17) The Horse.com Web site. March 8, 2007. Article #9096. Equine herpesvirus: three Virginia quarantines lifted.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9096>>. Accessed March 9, 2007.

18) The Horse.com Web site. March 12, 2007. Article #9116. Herpesvirus: Equine Medical Center quarantine partially lifted.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9116>>. Accessed March 14, 2007.

19) The Horse.com Web site. March 16, 2007. Article #9142. Herpesvirus: more horses released from Equine Medical Center.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9142>>. Accessed March 16, 2007.

20) The Horse.com Web site. March 29, 2007. Article #9265. EHV: Leesburg Equine Medical Center to reopen Friday.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9265>>. Accessed March 30, 2007.

21) The Horse.com Web site. March 29, 2007. Article #9269. Herpesvirus tests: all clear at duPont Center in Virginia.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9269>>. Accessed March 30, 2007.

Maryland

Harford County and precautionary quarantines [related to Virginia duPont Scott Equine Medical Center, described earlier in this document]

On February 23, the Maryland Department of Agriculture (MDA) announced that it was conducting an investigation at eight premises¹ in the State. Seven Maryland horses had possible exposure to an EHV-1 positive horse (index horse) that was treated for colic at the Marion duPont Scott Equine Medical Center in Leesburg, Virginia, and the seven horses were discharged and transported to their Maryland home stables prior to the index horse exhibiting neurologic signs consistent with EHM. The index horse was transported to a recovery center in Harford County, Maryland for treatment and was subsequently euthanized.

The MDA placed seven-day movement restrictions on 13 facilities pending test results from samples taken from horses on the premises. On March 19, the MDA announced the final test results taken the week of March 12 from horses involved in the quarantine, for a total of 62 negative tests. As a result of the tests, all premises remaining under hold orders were fully released.

Sources:

- 1) The Horse.com Web site. February 21, 2007. Article #8977. Herpesvirus: Md. officials investigating five exposed horses.
<<http://www.thehorse.com/PrintArticle.aspx?ID=8977>>. Accessed February 21, 2007.
- 2) The Horse.com Web site. February 27, 2007. Article #9021. Herpesvirus: test results returned on Maryland horses.
<<http://www.thehorse.com/PrintArticle.aspx?ID=9021>>. Accessed February 28, 2007.
- 3) The Horse.com Web site. February 27, 2007. Article #9029. Herpesvirus: more negative Maryland tests.
<<http://www.thehorse.com/PrintArticle.aspx?ID=9029>>. Accessed February 28, 2007.
- 4) Thoroughbred Times Web site. February 28, 2007. One Maryland facility remains under quarantine from EHV-1 outbreak.
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- 5) The Horse.com Web site. March 1, 2007. Article #9042. Herpesvirus: Maryland lifts additional hold orders.
<<http://www.thehorse.com/PrintArticle.aspx?ID=9042>>. Accessed March 1, 2007.
- 6) The Horse.com Web site. March 19, 2007. Article #9155. Equine herpesvirus: Maryland lifts final hold orders.

¹ Maryland investigated and placed movement restrictions on 13 facilities due to trace outs from the seven horses with possible exposure to the index horse at Marion Scott duPont Equine Medical Center.

<<http://www.thehorse.com/PrintArticle.aspx?ID=9155>>. Accessed March 20, 2007.

Next Steps regarding Equine Herpesvirus Myeloencephalopathy (EHM)

The equine industry has indicated concern regarding how to prevent and deal with future outbreaks of EHM, the neurologic manifestation of EHV-1. EHM has been a discussion item on several equine industry conference calls and at the American Horse Council meeting in June 2007. Currently, there is no experimental model that reproduces the severe form of EHM. There are many unknowns about the epidemiology of EHM; therefore, well-planned epidemiologic studies are needed. Lessons learned through outbreak mitigation as well as gathering critical information regarding risk factors for naturally occurring disease will be important in reducing the impact of this disease in the future. APHIS' Centers for Epidemiology and Animal Health will be compiling and assessing lessons learned and developing resources suggested by equine researchers and officials who have mitigated recent EHM outbreaks.

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