

Situation Report
2022 Canon City Equine Influenza Outbreak

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Updates and corrections will be in underlined, red font. Report #8
Situation Reports will be issued daily.
Information current as of 1530 MT, 5/05/22

Outbreak of respiratory disease characterized by high mortality attributed to pneumonia (pulmonary edema and hemorrhage) primarily among West Douglas horses (445) and more typical mild signs of a respiratory illness (fever, nasal discharge, coughing) in the balance of the facility (2550 total)

Summary:

On April 23, 2022 9 horses were found dead in 4 pens containing horses gathered from the West Douglas Herd Area in July/August of 2021. Several horses were gravely ill showing signs initially thought to be neurologic but later attributed to hypoxia from severe pneumonia. Over the next 3 days about two dozen horses died or were euthanized for severe debilitating respiratory distress in the West Douglas group of horses. Post mortem examinations consistently found pneumonia characterized by severe pulmonary edema and hemorrhage. Morbidity characterized by respiratory signs including fever, nasal discharge and coughing were also noted in 40-60% of the West Douglas horses with growing morbidity to about 20% noted in other pens throughout the facility. Over the course of the next 5 days PCR testing of blood, swabs and tissues for EHV-1 and -4 were consistently negative, however several nasal swabs and lung tissue specimens tested positive for equine influenza, confirmed to be H3N8 by PCR testing.

Contributing factors include a history of gather and removal of West Douglas horses after a severe wildfire in their herd area, severe winds and dust storms in the area in the days before the outbreak. The West Douglas horses had been in the facility for about 9 months but are still unsettled, flighty as a group and easily disturbed in the pens. Most of the facility population is current (within 6 months) for flu/rhino vaccination, however the West Douglas horses in pens 40-43 are either unvaccinated, have only received one shot, or only recently received their booster shots about 10 days before the outbreak.

Timeline:

4/18 A foal that had died following observation of a stillborn foal and another foal death is submitted for necropsy with concerns for equine herpesvirus (EHV1). Initial laboratory results are unremarkable, viral testing pending.

4/23 9 dead horses were found in pens 40-43, mostly among the studs that had just recently been vaccinated with their 6-way vaccine, several horses were taken to the diagnostic laboratory for necropsy.

- 4/23 Voluntary quarantine was established with no movement of animals allowed off the premises, biosecurity measures are increased throughout the facility
- 4/24-25 46 horses die or are euthanized among the West Douglas horses, additional horses are taken to the diagnostic laboratory for necropsy or necropsied on site with samples submitted for polymerase chain reaction (PCR) analysis
- 4/25 First press release goes out from BLM acknowledging the outbreak
- 4/25 First increases of respiratory morbidity are noted in other pens in the facility
- 4/25 The first samples tested are negative for EHV-1
- 4/26 Veterinarians with the United States Department of Agriculture (USDA) and Colorado Department of Agriculture (CDA) visit the facility to review biosecurity and consult on the outbreak investigation
- 4/26 Several nasal swab and lung tissue samples are PCR positive for equine influenza virus (EIV or flu) at two diagnostic laboratories.
- 4/27 Additional PCR testing from two laboratories confirms the EIV as equine H3N8 type flu virus
- 4/27 CDA issues first press statement
- 4/28 BLM issues second press release identifying H3N8 as the cause of the outbreak
- 4/28 Additional necropsy and laboratory test results confirm pneumonia caused by H3 equine influenza virus complicated by bacterial coinfection as the cause of death in more animals. EHV-1 and EHV-4 are NOT detected.
- 4/29 No additional
- 4/30 No additional
- 5/01 No additional
- 5/02 Further testing of the samples positive for the equine influenza virus has determined the virus to be the Florida Clade 1 sublineage. This is currently the endemic strain of equine influenza in North America
- 5/03 No additional
- 5/04 No additional
- 5/05 5/5 Culture and microscopic examination of samples obtained at necropsy have identified the bacteria streptococcus equi subspecies zooepidemicus (commonly called strep zoo) and actinobacillus

species of bacteria in lung tissues as well as evidence of these infections consistent with severe suppurative bronchopneumonia. Although in some cases strep zoo is considered a primary pathogen, these bacteria are generally considered to be ubiquitous bacteria (meaning common and widespread in animals and the environment) and commensal organisms that occur in most if not all horse populations. Commensal means these bacteria are usually thought to be opportunistic pathogens rather than principle causes of disease. While it is possible for these bacteria to be spread from horses to humans, this is a rare occurrence.

These findings support the initial clinical assessment that the respiratory disease and mortality seen at the facility is likely a multifactorial respiratory disease complex that includes the equine influenza virus, bacterial pathogens that are common in the environment and among all types of horses as well as environmental and host specific cofactors and comorbidities. On site clinical evaluations and sampling as well as laboratory testing including DNA analysis and work to identify specific types and strains of the virus and bacteria involved are ongoing.

Mortality by Date:

	Pen Number	Group Name	# Horses died	Comments
4/23	40-43	West Douglas	10	10 includes foal from 18 th as a possible link to outbreak.
4/24	40-43	West Douglas	22	
4/25	40-43	West Douglas	24	
4/26	40-43	West Douglas	10	
4/27	40-43	West Douglas	18	
4/28	40-43	West Douglas	10	
4/29	40-43	West Douglas	8	
4/30	40-43	West Douglas	4	
5/01	40-43	West Douglas	11	
5/02	40-43	West Douglas	2	
5/03	40-43	West Douglas	4	
5/04	40-43	West Douglas	4	
5/05	40-43	West Douglas	2	

Diagnostic Plans and Investigation:

Several carcasses were transported daily along with samples (nasal swabs, whole blood, lung tissues and others) sent overnight to diagnostic laboratories. Testing requested included PCR for respiratory wildtype and neuropathic EHV as well as pan herpes viruses, other EHV types, influenza, rhinitis and S. equi. Samples of feed, water and stomach contents were collected and stored for future analysis. A site visit and outbreak investigation were conducted in collaboration with the US Dept of Agriculture and the CO State Veterinarian’s Office on 4/26/22 (report available at <https://www.blm.gov/programs/wild-horse-and-burro/herd-management/herd-management-areas/colorado>). Specimens from more than 15 horses had been prepared for testing s of 4/26/22. At this time the transport of carcasses for necropsy was suspended to allow time for sample processing and

analysis to catch-up. Onsite necropsies and sample submission will continue as indicated based on the attending veterinarians' clinical observations. Additional site visits will be scheduled and the outbreak investigation revisited as indicated based on results of the initial testing and progression of the outbreak.

Treatment and Mitigation:

In addition to the voluntary quarantine of the entire facility, supportive care for affected animals and biosecurity measures have been put in place. Animals that could be handled without being moved outside the most affected pens were provided with anti-inflammatories and/or antibiotics at the direction of the attending veterinarian. Most of the affected animals are wild and ungentled and cannot be treated without use of the hydraulic squeeze chute systems. This risks further spreading the illness throughout the facility, stressing the animals that could exacerbate any current underlying issues and risk further injury to adults and young foals in the affected pens. For these reasons, individual animal treatment will be limited. The preventive medication of water with antibiotics is considered, but not implemented at this time. Dust mitigation efforts including wetting down adjacent roads and gravel areas is being done on an ongoing basis.