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## Equine Infectious Diseases and Bio Security Best Practices Follow Up – Dr. Kate Robinson

### 1. What is EHV?

- a. EHV stands for Equine Herpesvirus. There are several equine herpesviruses; of current concern is EHV-1. This is the virus that is most commonly involved with the outbreaks of neurologic disease. EHV-1 can also cause respiratory disease and abortions in pregnant mares.

### 2. What is EHM?

- a. EHM stands for Equine Herpesvirus Myeloencephalopathy. This is simply a specific name for the neurologic form of the disease caused by EHV.

### 3. What is the difference between EHV and EHM?

- a. EHM is one of three diseases that might result from an EHV-1 infection. EHV-1 can cause respiratory disease (cough, fever, lethargy and snotty nose), abortion (loss of fetus in the last four months of pregnancy, typically with no warning signs) and neurologic disease (fever, difficulty urinating and defecating, hind limb incoordination, weakness, dog-sitting and even inability or difficulty standing).

### 4. What are the other equine herpesviruses?

- a. EHV-2 does not usually cause disease on its own, but may suppress a horse's immune system allowing other infections or diseases to take hold and cause problems.
- b. EHV-3 is commonly known as coital exanthema. It causes small blisters on the external genitalia and is typically transmitted during breeding. It has no negative effect on fertility, but an affected mare or stud may be uncomfortable for natural breeding. Natural breeding should be stopped for about 2 weeks to allow the lesions to heal and to stop spread of the disease.
- c. EHV-4 is similar to EHV-1 in that it commonly causes respiratory disease, and may also cause abortions and very rarely neurologic disease.
- d. EHV-5 may cause nodules and fibrosis in the lungs leading to severe respiratory disease (difficulty breathing). EHV-5 is a slow growing virus and as such the associated disease is chronic and slowly progressive.

### 5. What are the signs of EHV-1? EHM?

- a. EHV-1 can cause respiratory disease (cough, fever, lethargy and snotty nose), abortion (loss of fetus in the last four months of pregnancy, typically with no warning signs) and neurologic disease (fever, difficulty urinating and defecating, hind limb incoordination, weakness, dog-sitting and even inability or difficulty standing). EHM is the neurologic form of EHV-1.



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**6. What does the disease progression look like?**

- a. Specific to EHM, horses will often present first with a mild fever (although if temperatures are not taken twice a day this may be missed) with neurologic signs developing several days later. The incubation period (time of exposure/infection to actually showing clinical signs) can be anywhere from 2-10 days. Horses may start with mild neurologic deficits, such as decreased tail tone, or difficulty urinating and/or defecating. The severity of the disease may progress to more severe neurologic signs, or may not. Progression depends on several factors and each case is slightly different. Horses that remain standing have a fair to good prognosis for return to health and athleticism. Horses that become recumbent (down and unable to rise) have a poor prognosis for survival and are often euthanized.
- b. A horse will typically take several weeks to recover fully from the respiratory form of the disease, and it may take weeks to months to fully recover from the neurologic form of the disease. In severe cases the horse may never fully recover from neurologic deficits. This can mean that they are unsafe to ride and may necessitate retirement. Mares who abort are typically not themselves sick, but should be isolated so as to decrease exposure to other pregnant mares.

**7. How do horses get EHV?**

- a. Most horses are exposed and become infected in the first weeks or months of life. It is most likely that they are exposed via their dam. For simplification, we assume all horses have been exposed to EHV-1 and 4 early in life. About 60% of exposed horses will become latent carriers. This means that the virus remains hidden and quiet in their body, but is not causing any disease. At times of stress (such as traveling or moving to a new facility) the virus can reactivate, at which point the horse may itself become sick or may shed virus and infect other horses, causing them to fall ill.
- b. It is important to note that not every stressful event will cause the virus to reactivate. This is a good thing, but makes it nearly impossible to predict when viral shedding may occur.

**8. How does EHV-1 spread?**

- a. EHV-1 is most commonly spread through respiratory droplets – so horses that have nose to nose contact or are housed closely together are at highest risk of exposure and spread.
- b. EHV-1 may also spread through indirect contact – things like shared feed tubs and waterers where respiratory mucus might end up are good examples of high risk indirect contact. Other ways of spread through indirect contact include people (touching an affected horse and then touching an unaffected horse), shared grooming equipment, shared tack, shared cleaning equipment (rakes, forks, shovels, muck buckets and wheelbarrows) and even dogs or cats that might make contact with a horse that is shedding virus and carry the virus to another horse.

**9. What are some things we can do to help prevent the spread of infectious diseases in horses?**

- a. By simply being more strict with ourselves and others when we travel with our horses, or when we ourselves travel from barn to barn, we can greatly decrease the risk to our equine partners.

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- b. Veterinarians, farriers, body workers and staff should be in the habit of disinfecting boots and hands if not between horses than at least between barns.
- c. Keep boot cleaning/disinfecting stations and hand disinfecting stations at main entrances and insist on them being used prior to people entering the facility.
- d. When away at a show or event, don't share equipment, especially not feed and water buckets.
- e. Don't allow horses to drink or eat from communal buckets/tubs when away from home.
- f. Don't allow your horse to have nose-to-nose contact with unknown horses.
- g. Clean and disinfect stalls at shows before putting horses inside.
- h. Strategically position tack stalls at shows so there is at least one stall width between your horses and unknown horses.
- i. If you visit with an unknown horse (or even a horse you know but that does not live at the same facility as your horse) wash your hands before going and interacting with your horse.
- j. Clean and disinfect trailers after use.
- k. Isolate or quarantine new or returning horses for at least 14 days (ideally 21 days).
- l. Vaccination against EHV-1 and EHV-4 may help to decrease viral shedding and viremia (the amount of virus circulating in the infected horse). In this way vaccination may help decrease the spread of the disease.

**10. If, after an outbreak no other horses show symptoms, does that mean they absolutely do not carry EHV-1?**

- a. No, horses can be asymptomatic carriers. They can have and shed EHV-1 without showing clinical signs.

**11. If horses are not showing signs, does that mean they aren't shedding virus?**

- a. No. Horses can be asymptomatic shedders. Donkeys and mules are particularly well known for being asymptomatic shedders.

**12. Can horses shed at random after quarantine? How can we keep this from happening?**

- a. Unfortunately, yes, horses can shed EHV-1 virus randomly. And it doesn't even have to be after a quarantine – they can randomly shed at any time, and for no specific reason. There is nothing we can do to stop this random shedding, unfortunately. And that is part of the problem with random testing. For example, some shipping companies are asking for testing on horses who are healthy and have not been exposed to the virus (are living at unaffected facilities and not part of an outbreak situation). There is a chance that a horse tests positive if we test them in this situation (due to random shedding). The problem is then, what do we do with those results? The horse is not likely shedding in a high enough quantity or a virulent enough strain to cause disease in other horses, but a positive test should probably trigger isolation and testing of in contact horses. It is a complicated situation without a perfect answer. We know that most horses are walking around as latent carriers of EHV-1. So we also have to be aware that they may shed the virus at random times. That is why we should reserve testing for when clinical signs are present, as it is much more clear what actions need to be taken in that situation.



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**13. After cleaning and disinfecting, when is it safe to allow another horse to inhabit the stall that previously housed a sick horse?**

- a. With proper cleaning and disinfecting the stall is likely safe to use immediately. However, if it could be left empty for 7-10 days that would be ideal. The virus is unlikely to survive in the environment beyond 7 days. In absolutely ideal conditions for the virus, it may survive up to 35 days outside a host.

**14. What should you do if you suspect EHV-1? What if you're at a horse show?**

- a. Whether you are at a show or not, the following should be your guidelines if you suspect your horse has EHV-1:
  - i. Isolate the affected horse immediately (at least 30ft from other horses) and initiate bio security protocols.
  - ii. Inform management (barn/facility and/or show management) immediately.
  - iii. Put up signage so that people do not pet or interact with the affected horse.
  - iv. Call your vet to initiate testing of the affected horse.
  - v. Bio security protocols should include: boot dip and hand sanitizer at the stall door of the affected horse, use of coveralls or change of clothes when interacting with the affected horse, ideally assigning one person to deal with the affected horse (for feeding, mucking, handling for vet, etc.) or choring unaffected horses before the affected horse, assigning equipment (buckets, brushes, muck bucket, fork) to the affected horse and ensuring this equipment is not used for other horses.
  - vi. Start taking twice daily temperatures on other horses in the barn or with close contact.
  - vii. Follow the advice of your veterinarian and/or barn and show management as each situation is slightly different and requires an individualized approach.

**15. How long can the virus live outside a host? Does this time vary between different types of equine viruses?**

- a. EHV-1 typically survives about 7 days outside of the host, but can survive to about 35 days in ideal conditions.
- b. Different viruses have different timelines for survival outside of hosts. For example, equine influenza may survive about 2 days outside of a host.

**16. Is EHV limited to horses or can ponies be infected?**

- a. Horses, ponies, donkeys, mules and even zebras can be infected by EHV-1.