



Healthy Horse Notes

briefs on current health issues
by Dr. Christine King

West Nile Virus in western Washington

Last week I received a notice that West Nile virus (WNV) has just been identified in a few mosquitoes in Yakima county. That's significant because it's quite a bit earlier than usual. Historically, there has been a definite seasonal pattern to WNV infections, with the peak occurring in late summer and autumn—not coincidentally when birds are migrating.

The fact that the positive mosquitoes were identified in Yakima county is less significant. That county has seen the lion's share of equine WNV infections ever since the virus arrived in this state.

Here is the link to the WA Department of Health web site which keeps track of WNV positives in mosquitoes, birds, horses, and humans throughout the state:

<http://www.doh.wa.gov/ehp/ts/Zoo/WNV/Surveillance09.html>

Click on the links to previous years if you want to see how this virus has ebbed and flowed in our state in the past 8 years.

WNV in western WA

Since surveillance began in 2001, there has been only one confirmed equine case of WNV infection in King, Pierce, and Snohomish counties combined. (That case involved a horse in King county, in 2006.) However, WNV-positive birds, mosquitoes, or both have been reported in one or more of these western counties on and off since 2002, including in 2008.

My feeling is that we may well see some equine cases of WNV infection in our area this year. That's not to cause alarm, but to start a dialogue about how to keep your horses healthy if this virus is more prevalent on our side of the mountains this year. Typically, WNV infection in horses is not a severe disease.* Still, it is best to be prepared.

* signs of WNV infection in horses are discussed at the bottom of page 4

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Preventive Strategies

1. A healthy, happy horse

The best defense against any infectious agent is a healthy, happy horse, and WNV is no exception. Following its first-ever introduction to the US in 1999, we had a unique opportunity to watch this virus play out across an entire continent, and through a large and diverse population of animals who were totally naïve to it.

As we watched WNV spread first south and then west across the US, and long before we had a vaccine to protect against it, we found that the majority of horses who were bitten by infected mosquitoes mounted an effective immune response. Most of the thousands of tested horses had WNV antibodies in their bloodstreams and had not shown any signs of infection. A relatively small percentage of horses showed signs of infection, and in the majority of those, the signs were mild and resolved without specific treatment.

That large epidemiological study told us two important things about WNV infection and horses: (1) this virus is not terribly pathogenic (compared with some other viruses, such as eastern equine encephalitis virus, or EEE); and (2) the mosquitoes did a pretty good job of vaccinating before we had a vaccine.

Also of note, the healthier the horse, the less likely it was that the horse would show signs of infection when bitten by an infected mosquito. The horses who were most likely to succumb to infection, and especially those who were severely affected, were those who were already unhealthy or who were under some sort of physical or psychological stress.

Now, even a healthy system can be overwhelmed by a particularly large assault. So, vaccination may make sense for healthy horses living in areas with a large mosquito population, such as those living near lakes or wetlands. More on vaccination later.

2. Mosquito control

Infection with WNV is largely a numbers game: exposed to a small or moderate viral load, a competent immune system can deal with it, with minimal effort or outward signs; but exposed to a very large viral load, even a healthy system with some preexisting WNV antibodies may succumb and show signs of infection. So, mosquito control can be effective in preventing WNV infection, simply by keeping the viral load down.

Depending on your facilities and capabilities, mosquito control may variously include the following:

* eliminate mosquito breeding areas (i.e. standing water) if possible; mosquitoes can breed in very little water, so walk around the property and empty any containers which are

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holding water that you can do without; encourage your neighbors to do the same, mentioning if necessary the fact that WNV can also infect humans

- * encourage the natural predators of mosquitoes, such as fish (which feed on mosquito larvae), frogs and other amphibians, dragonflies, bats, and insectivorous birds
- * use insect repellants, physical barriers (e.g. a fly sheet with a close weave), and moving air (natural breeze or electric fans) during peak mosquito feeding times, such as late afternoon and evening

3. WNV nosodes

A nosode is a homeopathic remedy made from a specific pathogen, in this case WNV. Contrary to some sources, nosodes are *not* natural alternatives to vaccination. That is not their purpose, and they are not effective when used in that way.

A nosode is designed to be used in the face of exposure to, or with actual illness caused by, the pathogen. Vaccination, in contrast, is intended to be given prior to any exposure, preferably several weeks before exposure.

I stock a WNV nosode in two potencies. It is one of the therapies I would use when treating a horse with WNV infection.

4. Vaccination

There are now four WNV vaccines licensed for use in horses. All four have proven efficacy against WNV challenge. That's the "pro." Now for the "cons."

Any vaccine involves the administration of foreign substances—the pathogen itself plus, in most cases, preservatives and an adjuvant—in a way that is designed to excite an immune system response. With most currently available vaccines, that generally is not too big of a deal in a healthy body with a robust constitution. But for all other bodies, it can pose a problem.

Vaccine reactions range from a little swelling and tenderness at the injection site or a few days of general malaise, all the way up to an acute and life-threatening systemic response or chronic immune-mediated inflammatory and ultimately degenerative disease.

For some horses, such as those not presently in good health or with a particularly sensitive immune system, it's just not worth it, not for a disease that is not terribly pathogenic, from which most horses recover fully, and for which prompt medical treatment generally is successful. Even the vaccine manufacturers state on their products that they are for use in *healthy* animals.

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If your horse has ever been vaccinated against WNV, then her/his immune system has already been informed about this virus and knows how to respond if challenged again. The point of vaccination is to maintain high circulating levels of antibody at all times, or at least during times of greatest exposure. If the horse already knows about this virus and is not exposed to a high viral load, then maintaining high antibody levels may be unnecessary. With any vaccine, it should come down to risk vs. reward for the individual horse.

The decision whether or not to vaccinate your horse/s against WNV rests with you, in consultation with your primary-care veterinarian. If that's me, then let's set up an appointment to discuss the best approach for your horse.

Wishing you and your horses well,

Dr. Chris King

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Signs of WNV infection in horses

This virus primarily affects the central nervous system (brain and spinal cord), so the main symptoms of infection are neurologic in nature. There usually is a fever, although typically it is fairly mild (<102.5 °F) and either short-lived or biphasic (two peaks separated by a period of normal body temperature), so the fever is easily missed.

The horse's demeanor usually is altered, but this too can be mild. There often is some degree of lethargy or dullness, but in many cases the horse simply is a bit grouchy or touchy. In fact, being hypersensitive to touch is quite a common symptom, as are fine muscle twitches or tremors in the muscles under the skin.

In moderate to severe cases, the horse may seem unsteady (ataxic, in medical parlance) or weak. These cases require prompt veterinary attention, as there are several more serious conditions that can cause similar symptoms.

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