

# West Nile Virus

## The Disease

West Nile Virus (WNV) is a mosquito-borne virus first detected in the New York City area of the United States (U.S.) in 1999. Since 1999, the virus has spread throughout the U.S. and Canada, infecting birds, humans, horses, and other animals. As of 2015, more than 27,000 horses in the U.S. have been infected since the disease was first identified. The virus is maintained in the wild bird population and is spread between birds by mosquitos. Birds are considered the natural reservoir for WNV since high levels of virus circulate in their bloodstream. Mosquitos acquire WNV in blood meals from infected birds and pass it on to other birds, animals, and people. Horses and humans are considered “dead end hosts”. This means that they do not develop high enough levels of WNV virus in their blood and thus, cannot pass the virus on to other biting mosquitos.

## Clinical Signs

WNV may cause a wide range of clinical illness ranging from mild “flu-like” signs to encephalitis (inflammation of the brain) that may be fatal to both humans and horses. While horses are susceptible to WNV infection, many infected horses do not develop clinical illness and recover uneventfully. Consult a veterinarian if your horse exhibits any of the following clinical signs:

- Fever,
- Incoordination, especially in rear limbs, causing stumbling and falling,
- Generalized weakness, muscle twitching seizures, or coma,
- Drooping lips and lip smacking, head drooping, grinding teeth,
- Hypersensitivity to touch or sound, and/or
- Recumbency (inability to rise).

## Diagnosis

Any horse displaying abnormal behavior or neurologic signs should be examined by a veterinarian to rule out neurologic diseases, such as WNV, Equine Herpes Virus-1, Equine Protozoal Myeloencephalopathy, Eastern/Western Encephalomyelitis, and Rabies. Blood samples should be collected by a veterinarian and sent for diagnostic testing. The WNV IgM capture ELISA test is a specific test that detects acute WNV infection in animals, is usually

positive within six days post infection and can remain positive for up to two months post infection. A positive WNV IgM Capture ELISA test is indicative of recent infection. Unexposed animals vaccinated for WNV will test negative on the WNV IgM capture ELISA test.

## Treatment and Prognosis

Currently, there is no specific treatment for WNV other than supportive care, which includes administration of anti-inflammatory drugs and intravenous fluids.

Recumbent WNV positive horses are at a higher risk of dying or requiring euthanasia. For horses exhibiting clinical signs of WNV, the fatality rate is approximately 33%; however, many infected horses will fully recover following infection.

## Prevention

Vaccination and mosquito control minimize the risk of WNV infection in horses. Although the number of WNV infected horses has declined since 2005, WNV remains an important disease in unvaccinated horses. The American Association of Equine Practitioners (AAEP) recommends incorporation of a WNV vaccine as an annual core vaccine in equine vaccination protocols. Horse owners should consult with their veterinary practitioner to ensure current WNV vaccination status of their horses.



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## Mosquito Control

Minimizing horse exposure to mosquitos during the peak mosquito feeding periods of dawn and dusk decreases the risk of horse exposure to WNV. Application of mosquito repellent can also effectively reduce the number of mosquito bites on horses. Control efforts to eliminate mosquito breeding sites are also important. Methods to eliminate mosquito breeding sites include:

- Draining unnecessary standing water found in wheelbarrows, tires, etc.,
- Cleaning water containers at least weekly (i.e., bird baths, plant saucers, etc.),
- Scheduling pasture irrigation to minimize standing water,
- Keeping swimming pools optimally chlorinated and draining water from pool covers, and
- Stocking of water tanks with fish that consume mosquito larvae or use of mosquito “dunks”, which are available at hardware stores.

## California’s WNV Surveillance

WNV surveillance includes testing samples from dead birds, sentinel chickens, mosquito pools, horses, and humans. The California Department of Food and Agriculture (CDFA) works with federal, state, and local health and agricultural agencies to minimize the impact of WNV on the equine industry. CDFA confirms suspect equine WNV cases, maintains horse surveillance data and educates horse owners on WNV disease control and prevention.

In October 2003, WNV was first diagnosed in California in 20-year old unvaccinated Missouri Fox Trotter. In 2004, California became the disease epicenter with 540 confirmed equine clinical cases of WNV. WNV is now endemic in California. The following chart summarizes the annual confirmed equine WNV clinical cases and the numbers of horses that died or were humanely euthanized in California since 2003.

Year	Confirmed Cases	Euthanized or Died
2003	1	0
2004	540	229
2005	456	200
2006	58	24
2007	28	14
2008	32	17
2009	18	7
2010	19	5
2011	15	4
2012	22	8
2013*	8	4
2014	15	2
2015	19	5
2016	21	7
2017	21	8
2018	11	6
<b>Totals</b>	<b>1,284</b>	<b>540</b>

\*Due to budget cuts (during the 2013 calendar year only) equine WNV cases were not confirmed after August 8, 2013.

### Reportable Disease Alert

West Nile Virus is a reportable disease (pursuant to §9101 of the California FAC, Title 3 California CR §797 and Title 9 CFR §161.4(f)) and must be reported within two days of discovery. If your horse is exhibiting clinical signs consistent with WNV or has been exposed please contact your private practitioner or CDFA officials.

[Reportable Disease List](#)

### Animal Health and Food Safety Services Animal Health Branch

Headquarters - (916) 900-5002  
 Redding District - (530) 225-2140  
 Modesto District - (209) 491-9350  
 Tulare District - (559) 685-3500  
 Ontario District - (909) 947-4462

**USDA-APHIS** (916) 854-3950 or (877) 741-3690

For more information, please go to the following:

[West Nile Virus Information Page](#)

[https://www.cdfa.ca.gov/ahfss/Animal\\_Health/WNV\\_Info.html](https://www.cdfa.ca.gov/ahfss/Animal_Health/WNV_Info.html)