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2010 Arbovirus Update

Florida has had exceptional mosquito-borne virus activity this year that affect both animals and humans. Several other states are reporting enhanced Eastern equine encephalitis virus (EEEV) and West Nile virus (WNV) activity. Both WNV and EEEV are caused by viruses that affect the central nervous system. Mosquitoes transmit these viruses to horses, but horses do not transmit the virus back to mosquitoes in either of these infections.

Eastern Equine Encephalitis. Horses with EEEV develop high fever, loss of normal mental activity, are unable to keep their balance, and show abnormal behaviors including circling and coma. This disease is highly fatal and death occurs in 95-100% of reported horses. Young animals and children are particularly susceptible to EEEV while older people and animals are susceptible to WNV. In years of high activity puppies have been reported to have developed and died from EEEV disease. Industry birdstock are also susceptible to EEEV including pheasants, partridges, and emus. EEEV activity has been reported in people this year with 4 human deaths consisting of 3 people in their 50's and one child. This upswing in activity is unusual because we are seeing several horse cases in South Florida and onset of intense activity has been rapid rather than accruing monthly through the year. Many of the cases in both horses and humans (4 fatalities) since mid-June with **89 horse** cases and activity reported in **42/67** counties. Nationally, EEEV has had intense activity in several northern states in 2010 including several horse cases in Michigan. .

West Nile Virus. The signs can be similar for WNV except that paralysis and partial paralysis with normal mental status is more common than the extreme changes in behavior observed with EEEV. The death loss is 35-50%, but long term deficits can occur. We have had WNV in 6 horses in Florida and activity has been reported in 14 counties. This activity is widespread as has been documented in several counties in chickens and mosquitoes over the last several weeks. Mortality for this disease is around 8-10% in humans. Humans, however, have grave neurological dysfunction long term. Many wild birds are naturally susceptible to WNV disease especially those in the crow family and raptors. Alligators have been reported to be susceptible and domestic and exotic felids have a fairly high seroconversion rate. Nationally, WNV is notable in that activity has been widespread in 2010. West Nile virus activity has been reported in 44 states. The WNV cases in humans have occurred in 25 states causing disease in 258 people and resulting in 36 positive blood donors. In horses, cases have occurred in Florida, Louisiana, Arizona, California, Nevada, Idaho, North Dakota, Iowa, New Jersey, Pennsylvania, Georgia and Tennessee.

Vaccination Recommendations. At least in horses, we can prevent EEEV and WNV through vaccination, so owners are advised to vaccinate their horses. If their horses have not been vaccinated within the last 6-12 months, it is advised that horse owners contact their veterinarian to do so immediately. The vaccine Guidelines of the American Association of Equine Practitioners (AAEP), defines core vaccines for horses to include EEE, WEE, West Nile Virus, Tetanus and Rabies.

Core vaccines are those that every horse should be vaccinated at least yearly because they protect from diseases that are endemic to a region, have potential public health significance, are required by law, are virulent/highly infectious, and/or are those that pose a risk of severe disease to horses. Horses should be vaccinated against EEE and WNV in the early spring each year. However, many horse owners, particularly those in high risk areas, should have their horses revaccinated every 5-6 months. This includes all Southern states including Florida. The best way to protect foals from these diseases is to provide good colostrum immunity through vaccination of the mares.

It is likely that in mares that have had several foals and have undergone frequent vaccination, then foals can be vaccinated between 5 and 6 months of age. If a mare is young or has had minimal vaccinations, then vaccination of foals may be performed earlier. Mares that have been minimally vaccinated should be revaccinated when not pregnant, before the next pregnancy.

It is essential that coming yearlings be revaccinated in the fall of their first year and spring of their second year before the onset of peak arbovirus activity. Young horses should be vaccinated at a minimum of two times per year and in the southern states three times per year to assure adequate immunity, especially EEEV.

Identification of either WNV or EEEV infection in a horse is important for both the horse industry and public health agencies so mosquito mitigation efforts can be pursued in areas of high activity and people can be informed of risk to themselves, their children, and livestock. If a horse is suspected of either EEEV or WNV here in Florida, the IgM capture enzyme-linked immunosorbent assay (MAC) is the test of choice for confirmation of acute infection for either WNV or EEEV. The Kissimmee State Diagnostic Laboratory forwards the samples to test by the National Veterinary Services Laboratory in Ames IA. A veterinarian must submit the test and any horse demonstrating clinical symptoms must be reported to the Department of Agriculture and Consumer Services/Division of Animal Industry by way of an arboviral form found on the State of Florida Website. <http://www.doacs.state.fl.us/onestop/forms/09125.pdf>. Contact: Dr. Michael A. Short, Equine Programs, 850-410-0901 fax 850-410-0919.

Protection from mosquito-borne viruses by additional mosquito mitigating activities is essential!

For Farm Management: 1) Use fly sprays frequently; re-apply spray repellents after rain. DEET containing human mosquito sprays can be used on face, tail head and distal limbs. 2) Keep horses in at night if possible or spray with fly spray. 3) If fans are used, they must be run at a speed which physically disperses the mosquitoes. 4) Remove

ALL standing water-clean water buckets every four days. 5) If stock tanks are used for livestock watering place mosquito-feeding fish in tanks. 6) If ponds are present, stock with mosquito-feeding fish. 7) For heavy mosquito infestations consider fogging. 8) Clean brush piles, gutters, litter, and old tires. 9) Cover pools. 10) Remove/clean all equipment in which standing water will develop.

Protect Yourself ALSO: Any time one is working outside, mosquito protection is important. Three main lines of defense should include avoidance of mosquito infested areas or increased air circulation, protective clothing, and use of repellents. Fans in barns and around work areas can aid in air movement but the movement must result in high airflow to be effective. Long sleeved clothing and pants are helpful, but mosquitoes will bite through thin clothes. By far the best repellents appear to be those that contain DEET (N,N-diethyl-m-toluamide). A product containing 23.8% DEET provided an average of 5 hours of protection from mosquito bites. A product with 20% DEET provides about 4 hours of protection and with 6.65% DEET there is about 2 hours of protection. Mixed products like those that contain 4.75% DEET and 2% soybean oil provide only 1-1.5 hours of protection. Caution should be used when using DEET on children. Spray on your hand first, then wipe hands on children. For children, use products with a low concentration of DEET (10% or less). Most guidelines cite that it is acceptable to use repellents containing DEET on children over 6 months. It is recommended that for children under 2 years of age only one application per day of repellent containing DEET should be used and some experts are concerned about use of DEET in children less than 2 mos. For babies, use mosquito netting on carriages and avoid activities in high areas of mosquito activity. Use screens on window and repair screens on doors and windows. Do not leave doors and windows open, especially during times of high mosquito activity. Keep pools drained in neighborhoods with empty houses. Turn over child pools at night and do not allow water to collect. Empty toys, plant containers and shake plants especially bulbs where water collects.

Mosquito-borne virus information can be accessed on the Internet and most states have a devoted website. Florida Department of Agriculture and Consumer Services:

<http://www.doacs.state.fl.us>, Florida Department of Public Health

<http://www.doh.state.fl.us/disease>, Centers for Disease Control and Prevention:

<http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>