

SAMPLING FOR EQUINE NEUROLOGICAL DISEASES DURING WNV SEASON

Clinical signs of all significant infectious causes of neurological disease in horses can be similar and may overlap. Some clinical signs are suggestive of certain diseases. For example, muscle fasciculations are suggestive of WNV, whereas loss of tail tone, anal sphincter tone, and bladder control in a horse with hind limb paresis/paralysis is suggestive of EHV-1. But all of the common diseases share enough clinical signs to make differentiation problematic.

Veterinarians with clients whose horses have neurological signs should call the laboratory to discuss the case before submitting samples. If this is not possible, in generic cases you might follow the sampling protocol below:

Always consider RABIES as a rule-out in horses with neurological signs.

Live horses: Take serum for WNV IgM testing. If WNV serology comes back negative, but you remain suspicious of WNV, consider taking a second sample 7 days later. If WNV is ruled out, proceed with EHV-1 testing (done in-house at WSVL) and WEE/EEE (referred to another laboratory), both done on serum. If clinical signs warrant, please take cerebrospinal fluid for EPM (referred to another laboratory).

Dead horses: **TRY** to get post-mortem serum for the WNV IgM test and for EHV-1 serology. **ALWAYS** collect serum from horses about to be euthanized. Serum is one of the most useful samples for WNV and EHV-1, even when an entire carcass is available for sampling. This is because postmortem tests for both diseases in horses are less than satisfactory.

Samples we need for a neurological workup are:

1. CSF fluid, collected at the atlas-C1 junction using needle-syringe or vacutainer through unincised dura mater.
2. Swab of meningeal surface before other brain samples are taken (to minimize contamination).
3. Whole brain, split longitudinally. Submit one half fixed, one half fresh.
4. Spinal cord: ideally, the whole thing OR segments of cervical, thoracic and lumbar cord. Less optimally, collect a segment of thoracic cord spinal cord. Submit fresh and fixed samples. Please keep in mind that some diseases affect only certain portions of the spinal cord. Submission of the entire cord or multiple samples increases the chances of the laboratory making an appropriate diagnosis. If you are in a hurry, consider submitting a segment of spinal cord in intact 1 – 3 vertebrae, and trim off muscle to reduce the cost of shipping. We will take out the cord here.
5. PLEASE collect all other routine samples (lung, liver, spleen, kidney, heart, GI tract, etc.) both fresh and fixed. Some "neurologic" horses have primary disease elsewhere (e.g., hepatic encephalopathy).
6. If you suspect **BOTULISM** examine feed for contamination (carcasses) and send feed and gut content samples for toxicology.
7. If you suspect **EHV-1 MYELITIS**: collect and send a purple top tube and nasal swabs.
8. If you suspect **EPM**: CSF is very helpful – it should be free of RBC contamination and collected promptly after death.
9. If you suspect **INTOXICATION**: Collect 10 ml heparinized whole blood, serum, 100 ml urine, several hundred grams of fresh liver, kidney, ingesta, urine, heart blood, and any suspicious environmental samples (feedstuffs, water, drugs). Toxicology is expensive, so please specify what tests you have in mind or, if you want us to "screen" for poisons, please specify a price limit for toxicology testing.

WSVL will run rabies first, and then proceed with other tests as appropriate. We will NOT routinely attempt virus isolation from WNV-suspects due to the health risk to laboratory personnel.

A complete history of clinical signs, duration of illness, vaccination status (WNV, rabies, EEE/WEE, other), travel history, other horses affected/sick/dead, etc., is **CRITICAL**.

If you have questions about a difficult neurological case, please call the laboratory at 307 742 6638 before submitting samples.

Dr. Todd Cornish
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