

Currently Available Diagnostics

Infected animals develop specific antibodies for vesicular stomatitis viruses within 4 to 5 days after infection. Antibodies produced in response to vesicular stomatitis New Jersey and Indiana-1 viruses can be identified by competitive enzyme-linked immunosorbent assay, complement fixation (CF), or virus neutralization (VN) tests. Each serologic test differs in its ability to detect antibodies based on the type of antibodies produced, when the antibodies are detectable in the course of infection, and the length of time that detectable antibodies persist post-infection.

1. **CELISA (competitive ELISA)** – Generally considered a one day test and can be run the same day a sample arrives at the lab. Available only through NVSL and is an OIE prescribed test for international trade. Naturally infected horses can test positive for over two years following infection (n=2, study on going). Results are reported as positive or negative.
2. **CF (complement fixation)** – Generally considered a one day test, but is usually not set up the same day the sample is received due to the length of the test. Available through multiple labs and is an OIE prescribed test for international trade. Generally considered a test that measures current infection as positive results last for several weeks to a few months (long term study with naturally infected horses is in progress). Results are reported as negative at 1:5 or positive with a specified dilution. This test is prone to problems if the serum is left on the clot (anticomplementary (AC) or nonspecific (NS)). Therefore, be sure to separate the serum from the clot before shipping to the lab. Make sure to ship on ice packs.
3. **VN (virus neutralization)** – Also referred to as serum neutralization or SN. This test takes 2-3 days to complete. Available through multiple labs and is an OIE prescribed test for international trade. Naturally infected horses can test positive for over two year following infection (n=2, study on going). As cell cultures are used for this test, there is always the potential for the test to have performance problems. Therefore, it is imperative that samples be collected as early as possible if an animal is being tested for movement purposes. Holidays and workload volume may result in altered test schedules due to the length of the test. Results are reported as negative or positive with a dilution. The recommended dilution for considering a sample positive is 1:32 according to the OIE Manual of Diagnostic Tests. Dilution requirements for movement testing are highly variable and recipient states/countries should provide information on the required dilution for testing to import animals into their state/country. This test is prone to problems if the serum is left on the clot (toxic sample). Therefore be sure to separate the serum from the clot before shipping to the lab. Make sure to ship on ice packs.

Indiana and New Jersey vesicular stomatitis viruses can be isolated by inoculating tissue culture with vesicular fluid, epithelial tags from lesions, biopsy tissues, or swabs of

Appendix C: Currently Available Diagnostics

lesions. Virus can be detected from the lesions of experimentally infected animals for up to approximately one week after infection. Virus isolation is a labor intensive test requiring the handling and processing of materials potentially infectious to laboratory workers and requires strict adherence to protocols to prevent cross contamination. The test is prone to toxicity and bacterial contamination issues due to the nature of the materials processed for virus isolation. Initial results can be available in approximately 24 hours, but final test results aren't available for at least 7 days.

Due to the time it takes for horses to develop antibodies and the short duration of viral shedding from infected horses, it is recommended that both serum samples and samples for virus isolation be collected when a clinically ill horse is examined.