Equine protozoal myeloencephalopathy (EPM) is one of the most important neurologic diseases in the horse and remains a problem for horses and their owners. Over the past several years’ work has been directed at better understanding this disease problem in horses along with how to treat and prevent the problem. Prevention has been more difficult than anyone imagined. Wildlife management, risk-factor manipulation and preventative medications remain the center of attention. Thus far efforts towards vaccine development have proven ineffective.

Original research in the mid-1990s led to the discovery of the opossum as the definitive host (carrier) for *Sarcocystis neurona*, the primary parasite that causes EPM in horses. Skunks, raccoons, armadillo, sea otters, harbor seals and even domestic cats can be intermediate hosts. While in an intermediate host, the parasite goes through several stages of its life cycle. Although these hosts cannot infect the horse, they are responsible for infecting the definitive host (opossum). *Neospora hughesi* is another parasite that can cause EPM.

**Diagnosis**

Horses that have clinical signs of ataxia (inability to coordinate voluntary muscle movement) should be tested for neurologic disease. Testing should begin with a neurological examination followed by use of a validated test from a recognized diagnostic laboratory. Many horses will test serum (blood) positive due to exposure and antibodies against these protozoan parasites. The test I most often use is the *S. neurona* titer ratio. This was developed by Dr. Dan Howe of the Gluck Equine Research Center and is commercially available through the Equine Diagnostic Solutions (EDS) laboratory in Lexington, Kentucky. This test can be done on blood and/or cerebrospinal fluid (CSF). Other tests include western blot analysis and Fluorescent antibody testing (IFA), which are done at several diagnostic laboratories (i.e. -IDEXX, UC Davis, Michigan State, Neogen, EDS). In my opinion and experience the best testing includes examination of both blood and CSF.

**Treatment**

The standard treatments for EPM remain Marquis or Pyrimethamine and Sulfadiazine in combination. The newest protocol for Marquis administration requires five tubes with one-half tube (4200#dose) being administered for two days followed by 28 days of the regular dose (1200#). The newest medication is Diclazuril, which has been used in other formulations and will soon be available as Protazil by Intervet Schering-Plough. When treating neurologic cases, I recommend the additional administration of natural Vitamin E (i.e. Nano-E®, Elevate®) to combat nervous system inflammation.

**Prevention**

Recent research suggests that risk factors for the disease include age of the horse, occupation of the horse, season of the year, presence of woods on the premises, presence
of opossums, lack of feed security, health events before diagnosis and previous cases of EPM being diagnosed on the farm. Any stressful situation such as travel, another illness or undergoing general anesthetic could be aggravating factors.

The opossum is a scavenger by nature and will eat anything (omnivorous). Thus the prevention of EPM remains problematic. Horse owners should pick up carrion (raccoon, skunks etc.) to keep them from being eaten by opossums. Hay and grain should be kept in opossum-proof facilities, as preventing access of opossums to the horse’s environment is difficult. But even if this is done, there is still the inability to protect pastures from contamination. As many of the factors are difficult to manipulate, improving the immune status of the horse may be an important and effective criteria.

Conclusions
Although we have a good understanding of the clinical signs and treatments as well as the life cycle of *S. neurona*, the principal cause of EPM, we are still working on ways to prevent this disease. One important technique to help prevent EPM is the removal of any intermediate hosts that have died from the environment, as these are the source of infection for the opossum. Therefore, picking up dead skunks, raccoons, armadillos or cats to prevent opossums from eating them should prevent the deposition of sporocysts from contaminating the environment and help reduce the incidence of EPM. Whether a vaccine will ever be developed to help prevent this disease remains an open question at this time.