

## Potential for the “Perfect Storm” at Equine Events

A disease “perfect storm” occurs when numerous disease risk factors and a viable disease pathogen successfully interact resulting in the introduction and successful spread of the infectious disease agent to a susceptible population. The threat of a “perfect storm” concerns many equine event organizers. In the world of equine events, a “perfect storm” situation could occur if susceptible, stressed horses at an event venue are exposed to a viable infectious disease agent, the conditions and environment at the event support disease transmission and the disease agent rapidly spreads throughout the population of animals on the premises. In May 2011, horses that attended the National Cutting Horse Association event in Ogden, UT were exposed to the neurologic form of Equine Herpesvirus-1. The resulting outbreak, which garnered national attention, serves as an example of a disease “perfect storm” situation that had a significant impact on the equine industry.

**1. Entry and Movement of the Disease Agent:** Some equine infectious disease agents are ubiquitous in the environment and may naturally be present on the event grounds. Other infectious disease agents may be brought onsite by apparently healthy “carrier” animals. A multitude of factors, including stress, may result in a carrier animal becoming sick while at an event. This diseased horse may shed the pathogen exposing susceptible horses. Depending on the infectious disease agent, some exposed horses may shed the infectious disease agent during an incubation period before showing clinical signs of disease. So a sick shedding horse and a clinically healthy horse incubating a disease may shed disease agent into the environment, potentially infecting other horses at the same event. At an event lasting several days, an infectious disease agent can potentially disseminate throughout the entire venue exposing a large population of horses. Exposed horses that are subsequently moved from the venue can potentially spread the disease to horses at the next site of destination.

**2. Exposure of Stressed Susceptible Horse Population:** Horses participating at events away from their home premises experience stress associated with travel, an unfamiliar environment and competition/exhibition. Stress affects the immune system lowering defenses against invading pathogens. If an invading infectious pathogen is one to which the stressed horse has not been previously exposed, the potential for infection with exposure increases.

**3. Environmental Spread of Disease:** Many environmental factors contribute to the spread of disease. Air temperature, wind and humidity can promote the survival and transmission of infectious disease agents. The stable environment at an equine event may significantly influence the spread of the infectious disease agent and the quality of the ventilation in the stabling area may directly facilitate pathogen spread. Many multi-day equine events have space limitations for stabling, so horses are often kept in close

confinement. Such close confinement may promote the ability of a disease agent to spread.

**4. Lack of Biosecurity:** Properly implemented biosecurity measures may significantly decrease the risks for disease introduction and spread. Failure to implement, or to comply with, biosecurity measures may lead to an increased likelihood of on-site disease agent introduction and transmission.