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Infectious disease control – recommendations for biosecurity and vaccination

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March 2008

Resource: American Association of Equine Practitioners (AAEP), www.aaep.org

General comments

Horses are at risk of infectious disease, which may result in individual disease or disease outbreaks. Infectious disease has the potential to significantly impact the horse industry through loss of horse health and potentially life, loss of performance ability of individual horses, cancellation of events in case of disease outbreaks, increased veterinary costs, emotional stress, and loss of regard for the horse industry. As many infectious diseases are transmissible among horses, and are potentially transmissible to humans (i.e. zoonotic potential), increased awareness of the risks and education of horse owners as well as the public concerning methods of preventing disease transmission are essential.

The information provided in this document is intended to serve as a reference for horse owners, event organizers and managers of horse farms. The document is focused on disease prevention through biosecurity and vaccination. Comments on handling of situations where infectious disease is suspected or identified are also included. Guidelines concerning biosecurity and vaccination provided by the American Association of Equine Practitioners (www.aaep.org) were used as a reference and are available on the AAEP website.

This document contains general information and is not meant to be applicable to every situation. Horse owners are urged to contact their veterinarian with questions concerning specific disease risks in their area, need for vaccination and/or for help with instituting a biosecurity protocol. Also not covered in this document is general information concerning vaccines and vaccination strategies, storage and handling of vaccines, vaccination schedules, adverse reactions, foal vaccinations and passive transfer. This information is available on the AAEP website under "Guidelines – Guidelines for the vaccination of horses".

Infectious disease control

According to the AAEP, infectious disease control programs should be directed toward:

- reducing the exposure to infectious agents in the horses' environment
- minimizing factors that decrease resistance or increase susceptibility to disease
- enhancing resistance to those diseases by vaccination

It is important to remember that vaccination is only part of an infectious disease control program and cannot replace or offset improper biosecurity. Biosecurity is defined as the precautions taken to minimize the risk of introducing infectious disease into an animal population, and to minimize spread of infection once disease occurs. Biosecurity protocols for individual facilities should be developed in coordination with the local veterinarian serving the facility.

Horse populations are at increased risk of infectious disease under conditions of high density, commingling of horses from different backgrounds and of different ages, and stress. These conditions are commonly present on breeding farms, in sales or boarding facilities, in training barns, on show grounds and on racetracks. Many horses entering these facilities have undergone prolonged transport further adding to stress and the potential for decreased immunity. Infections of the respiratory tract are the major concern in these situations, however, other infectious diseases such as infectious causes of diarrhea should also be considered.

Transmission of most infectious diseases is by the respiratory route (nasal secretions) and/or manure. Direct contact among horses is an obvious risk for disease transmission, however, indirect transmission by human beings (e.g. contaminated hands or clothing) or equipment (e.g. sharing of feed buckets) must also be considered. To put it simply, anything that comes into contact with infectious material (such as nasal secretions and manure) has the potential to transmit disease.

Sick horses should be considered infectious to others until a diagnosis has been made and the risk of disease transmission has been assessed. Importantly, however, infectious organisms can also be shed by overtly healthy horses. This may occur when horses shed infectious organisms before they show clinical signs of disease (i.e. during the incubation period) or when horses have subclinical infections. Biosecurity is therefore especially important when dealing with horses of unknown disease and/or exposure status, such as horses newly admitted to a boarding facility.

Some infections are transmissible from horses to humans, i.e. they are zoonotic. Risks of zoonotic disease may be highest for people with compromised immune systems such as young children and the elderly, people with pre-existing diseases, and people receiving immune-suppressive drugs such as chemotherapy or corticosteroids.

General recommendations for biosecurity

1. **Assess risk of infectious disease**

Early identification of horses shedding infectious organisms is imperative. Any horse identified as being sick should be isolated from the others and evaluated by a veterinarian. Further handling depends on the diagnosis and the perceived risk for disease transmission.

Horses of unknown disease and/or exposure status should be isolated to ensure they do not transmit infectious organisms to other horses during the incubation period (i.e. the period between infection and occurrence of clinical signs). New additions to a farm should be isolated for 21 days and monitored closely for clinical signs. Testing of new additions for shedding of specific infectious organisms (e.g. *Streptococcus equi*, the bacterial organism causing strangles) may be advisable under certain circumstances.

Veterinary examination prior to transport and/or commingling with other horses can also help to detect potentially infectious horses. Event managers may consider requirements for health certification within a specified time period of the event to minimize the risk of admitting sick horses. Health certification is generally based on clinical examination; however, specific testing can also be required. Requirement for health certification should be communicated broadly to all participants. Participants may further be asked to assure freedom from clinical disease in their horses within a specified time period (e.g. 30 days) prior to an event; a statement to this effect may be included in the entry form.

Fever is a common early sign of infectious disease. Monitoring rectal temperature of horses, especially in situations where disease exposure is suspected or during outbreaks, facilitates early identification of additional diseased horses. Rectal temperature should be taken twice daily; normal rectal temperature of horses is 37.5 °C – 38.5 °C.

2. **Avoid direct contact between horses of unknown disease/exposure status**

As stated above, isolation of new additions and of horses of unknown disease and/or exposure status is advisable until their health status can be assessed and/or a period of time has passed without the horses showing clinical signs of disease. In situations where isolation of horses is not feasible, e.g. at show grounds or during sales, segregation of horses of different origins is advisable to minimize the risk of disease transmission.

Direct contact is often misinterpreted as implying that horses are housed in a common area. It is important to remember that direct contact includes nose-to-nose contact over a fence or between stalls as well as the ability of horses to access other horses' manure.

If infectious disease is suspected or diagnosed, complete isolation of affected horses in a separate facility is ideal but not always practical. In situations where horses must stay in a common barn, leaving at least one empty stall between the affected horse and others, along with proper barrier precautions (see below) is recommended.

3. Avoid indirect contact through human traffic

Human traffic in horse facilities should be limited to those persons having to work with or care for horses. People should avoid contact with horses other than their own. Soiled clothing and boots should be changed and/or cleaned and disinfected before working with another horse. Visitors should be instructed not to touch horses unless necessary.

In situations where human traffic cannot be restricted, e.g. sales or horse shows, people should be instructed to use proper hand hygiene between horses. This generally includes washing and disinfecting hands before and after touching a horse. Readily accessible wash basins and disinfectant soaps should be available. Hand sanitizers (e.g. Isagel®) are useful and should ideally be used in combination with hand washing. Hand sanitizers should be available for each stall and at the entry into and exit from the facility.

People traveling between horse facilities should consider having separate clothing and boots for each facility. Boots should be cleaned and disinfected before entry into and exit from a facility. Cleaning and disinfection of vehicles entering and exiting a facility should also be considered.

If infectious disease is suspected or identified, barrier precautions should be employed for affected as well as healthy horses. These include separate coveralls or gowns, gloves, and boots or boot covers for each animal. In addition to barrier precautions, proper hand hygiene is imperative. Some situations may require showering and/or hair washing after dealing with an affected horse. Disinfectant foot dips are often employed at the entry and exit from facilities and/or for each individual animal.

During disease outbreaks, it is ideal to have different personnel work with affected as opposed to healthy horses. Where this is not possible, healthy horses should be taken care of first, followed by exposed and lastly sick horses. Barrier precautions should be employed for each horse, or at least each group of horses (healthy vs. exposed vs. sick).

4. Avoid indirect contact through equipment

Separate equipment such as feed buckets, water bowls, grooming supplies and tack should be available for each animal. Where this is not possible, equipment should be cleaned and disinfected between horses. Equipment routinely used on several horses that cannot be cleaned and disinfected each time should be cleaned and disinfected at regular intervals and if it becomes

contaminated. This may include shovels, feed wagons, and farrier equipment. Following a disease outbreak, equipment that cannot be effectively disinfected should be discarded.

Horse trailers should be cleaned and disinfected after each use, but especially after transport of horses of unknown disease or exposure status.

5. **Cleaning and disinfection**

Thorough cleaning and removal of all organic matter (i.e. manure, nasal secretions) is a pre-requisite for effective disinfection. Many disinfectants are inactivated by the presence of organic material.

Disinfectants should always be used as per manufacturer's instructions. Users should specifically check the spectrum of organisms the disinfectant is effective against, as well as the proper dilution and contact time required. Manufacturers should be contacted for additional information where necessary.

Cleaning and disinfection must extend to the facilities as well as equipment used such as feed buckets, water bowls and cleaning equipment. Loose rubber mats that allow water pooling, water bowls and drains are of specific concern as areas where infectious organisms can "hide". When using power washers, the risk of aerosolizing infectious organisms should be considered.

Health hazards to users as well as animals should be considered for some disinfectants. Manufacturers should be contacted for information concerning proper use.

General recommendations for vaccination

Vaccination serves to increase resistance against certain diseases in individual animals as well as horse populations ("herd immunity"). It is important to remember that vaccination is not 100% effective in preventing disease, and that individual protection from vaccination is variable. In some instances, vaccination does not provide protection against infection but merely decreases the severity of clinical disease and/or decreases shedding of infectious organisms. As stated by the AAEP, "Vaccination alone, in the absence of good management practices directed at infection control, is not sufficient for the prevention of infectious disease."

Although uncommon, vaccination carries the risk of adverse reactions ranging from mild injection site reactions to anaphylactic reactions and induction of disease. The risks of exposure must therefore be carefully weighed against the risks of vaccination. Horse owners should contact their veterinarian to discuss the ideal vaccination strategy for their individual situation. Vaccine manufacturers can also be contacted for further information, and should be informed of all adverse events resulting from vaccination.

Guidelines for vaccination are available on the AAEP website (www.aaep.org). These guidelines were revised in 2007 and are available to AAEP members and non-members alike. As with all guidelines, the guidelines for vaccination are recommendations, not regulations or directives.

The AAEP guidelines differentiate core vaccines and risk-based vaccines. The American Veterinary Medical Association (AVMA) defines core vaccines as those "that protect from diseases that are endemic to a region, those with potential public health significance, required by law, virulent/highly infectious, and/or those posing a risk of severe disease. Core vaccines have clearly demonstrated efficacy and safety, and thus exhibit a high enough level of patient benefit and low enough level of risk to justify their use in the majority of patients."

As per the AAEP guidelines, core vaccinations for horses include tetanus, equine/western encephalomyelitis, West Nile virus and rabies. Information concerning these diseases, available vaccines and recommended vaccination schedules are available on the AAEP website.

As per the AAEP guidelines, risk-based vaccinations for horses include anthrax, botulism, equine herpesvirus, equine viral arteritis, equine influenza, Potomac horse fever, rotaviral diarrhea and strangles. The need for vaccination against these diseases should be decided on an individual basis, taking into account exposure risk, potential impact of disease, cost and potential adverse effects. Horse owners should talk to their veterinarians.

Owners of equine facilities such as boarding stables and breeding farms, as well as managers of horse events may consider establishing entry requirement for horses into their facility. Aside from health certification and testing (see above), these may include requirements for vaccinal history. As a general rule, "horses should be appropriately vaccinated no later than one month prior to entering or leaving such a facility in order to produce adequate antibodies before the anticipated exposure." (AAEP)

Respiratory diseases are a major concern in situations where horses from varying backgrounds commingle, stocking density is high, horses vary in age and disease susceptibility, and horses may have undergone stressful events such as prolonged transport. These situations include horse shows, sales and other events. If requirements for vaccination are established under these circumstances, diseases such as influenza, equine herpesvirus infections (EHV-1 and EHV-4) and strangles should be considered.