

Routes of Disease Transmission and Control Measures for Equine Events

Aerosol Transmission: Droplets containing a disease agent are passed through the air from one infected animal to another susceptible animal. The ability of a pathogen to survive and be effectively transmitted by aerosol depends on many variables, including stocking density, temperature, ventilation, humidity and dust. Respiratory diseases, such as Influenza Virus, Rhinopneumonitis and other common respiratory viruses, can quickly spread through an event facility; often horses are exposed before it becomes apparent that an index horse is sick. Airborne diseases are the most difficult to contain and complete control is often not feasible, especially on premises holding frequent events with horses continually being moved in and out of barns. Suggested control measures include:

1. **Decreased Stocking Density:** Greater distance between horses and fewer horses in a confined air space decrease risk of disease transmission.
2. **Dust Reduction:** Dust and other airborne irritants can reduce an animal's ability to clear respiratory pathogens, therefore resulting in respiratory disease. Ensure that ventilation systems and water sprinklers are working efficiently to decrease dust and airborne irritants.



Direct Contact Transmission: Direct exposure of a susceptible animal may occur when the disease agent directly touches an open wound, skin or mucus membranes of the nostrils, mouth or eyes. An infectious disease agent can be passed from an infected animal to a susceptible animal through contact with saliva, nose-to-nose

contact, rubbing and biting. To prevent direct contact transmission:

1. **Restrict Horse-to-Horse Contact:** Solid stall walls and full door stalls limit direct contact with horses in adjacent stalls and horses passing in the barn aisle ways. Do not permit tying of horses next to each other on exhibit area fences or in communal areas, such as in wash racks.

Oral transmission: Oral transmissions of pathogens to the horse occur through the direct ingestion of contaminated feed or water and through oral contact by licking of objects contaminated with infectious disease agents. To avoid oral transmission of infectious disease agents:

1. **Secure Feed Storage:** Restrict access to feed by wildlife, birds, vermin, scavengers, dogs and cats, which may urinate, defecate or otherwise introduce disease. To prevent spoilage and mold growth, take appropriate measures to protect and store feed and hay from the effects of weather.



2. **Evaluate Risk of Water Sources:** Due to the inability to control water quality and prevent contamination with disease agents, surface water sources, such as streams, ponds and irrigation ditches, pose a significant disease risk. Contamination can be due to wildlife, fecal material, urine and environmental toxins. Due to the disease risks, use of surface water sources at events must be restricted. If communal water troughs must be

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used during the event, routinely clean and disinfect the troughs.

Fomite Transmission (Indirect Contact): A fomite is an inanimate object that may be contaminated by an infectious organism and serve in their transmission. Virtually any object can serve as a fomite, including equipment, water buckets, tack, hoses, clothing, bedding, etc. Measures to limit fomite transmission include:

1. **Avoid Shared Equipment:** Ideally, each horse will have its own equipment, water bucket, tack and wipe rags. Clean and disinfect any shared equipment between uses. Dedicated supplies and equipment must remain in isolation areas for the treatment of sick horses.
2. **Traffic:** Vehicles and trailers can spread disease agents on contaminated tires, wheel wells and undercarriage; people can spread the disease agent on their clothing and shoes/boots. Restrict traffic flow patterns and designate parking areas to limit contamination and animal exposure.

Vector Transmission: An insect or tick acquires a disease agent from one animal and transmits it to another animal. Vector-borne diseases are those which involve the transmission of infectious disease agents by biological vectors, such as mosquitoes, ticks, fleas and flies. An effective vector control program includes:

1. **Treatment of Horses:** Direct treatment of horses with insecticide pour-ons or sprays is effective, but their effectiveness is of short duration and there are concerns about insect and tick resistance to the chemicals in these products. Some horses have skin sensitivities and have adverse reactions to the chemicals in insecticides. Based on these concerns, it may be difficult to enforce

an insecticide treatment policy during the event, but insecticide application should be recommended.

2. **Treatment of Premises:** Application of insecticides on a premises is effective on small event grounds, but becomes inefficient on larger areas. Effectiveness of most products is dependent upon weather conditions; sunlight can break down some of the chemicals contained in the treatments and the ideal target air temperature for applications is 65-90°F. Strictly follow the product manufacturer guidelines on the label since inappropriate use can greatly reduce efficacy, can present a hazard to the animals/environment/humans and can lead to insect resistance. Consult a professional when developing a control plan.
3. **Separate Host and Vectors:** If insects and ticks cannot be eliminated through treatments, consider methods of separating the horses from the vectors. Where possible, eliminate horse access to areas where mosquitoes, flies and ticks reside. Fencing off areas of high insect and tick populations, such as wooded areas for ticks, or confining animals to buildings during peak periods of mosquito activity, such as dusk to dawn, may be effective vector control measures.
4. **Eliminate Insect Breeding Areas:** Elimination of standing water, especially wet, muddy areas, is an effective mosquito control measure. Regular removal of decaying organic matter aids in controlling the fly population on the premises. Decaying organic material includes spoiled feed, soiled bedding, and open manure piles.