

## Equine Biosecurity and Biocontainment Practices on U.S. Equine Operations

With the globalization of animal industries, biosecurity and biocontainment practices play a vital role in the health of domestic animals. Biosecurity practices include measures that reduce the risk of disease introduction on an operation. Biocontainment practices include measures that reduce the spread of disease on an operation and from one operation to another. Vaccination, another important aid in infection control, will be addressed in a separate information sheet.

Equine diseases are spread in a variety of ways, including direct contact between equids and contact with feces, insect or animal vectors, aerosol particles, and contaminated needles. Often overlooked but equally important modes of disease transmission include contact with contaminated equipment, tack, transport vehicles, clothing, boots, or hands. Apart from contaminated apparel or hands, humans themselves also can be a source of infection.

For the Equine 2005 study, the U.S. Department of Agriculture's National Animal Health Monitoring System collected data on equine health and management practices from a representative sample of operations with 5 or more equids in 28 States divided into 4 regions.\* The 28-State target population represented 78.0 percent of equids and 78.6 percent of operations with 5 or more equids in the United States. Interviews were conducted from July 18 through August 12, 2005, and 2,893 equine operations provided data on equine health and management.

Of operations participating in the study, 40.3 percent identified their primary function as "farm/ranch" and 37.0 percent identified their primary function as "residence with equids for personal use." Over 95 percent of operations had horses and 34.8 percent had equids other than horses, e.g., donkeys, burros, mules, ponies, and miniature horses.

### \*Regions:

**West:** California, Colorado, Montana, New Mexico, Oregon, Washington, and Wyoming

**Northeast:** New Jersey, New York, Ohio, and Pennsylvania

**South:** Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Oklahoma, Tennessee, Texas, and Virginia

**Central:** Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, and Wisconsin.

### General Practices

General biosecurity measures taken on equine operations include isolation protocols, infection-control precautions for visitors, and use of separate or disinfected equipment. Other general management practices address contact with other animals, potential contamination of feed and water, insect control, and manure management.

#### *Separation for isolation or infection control*

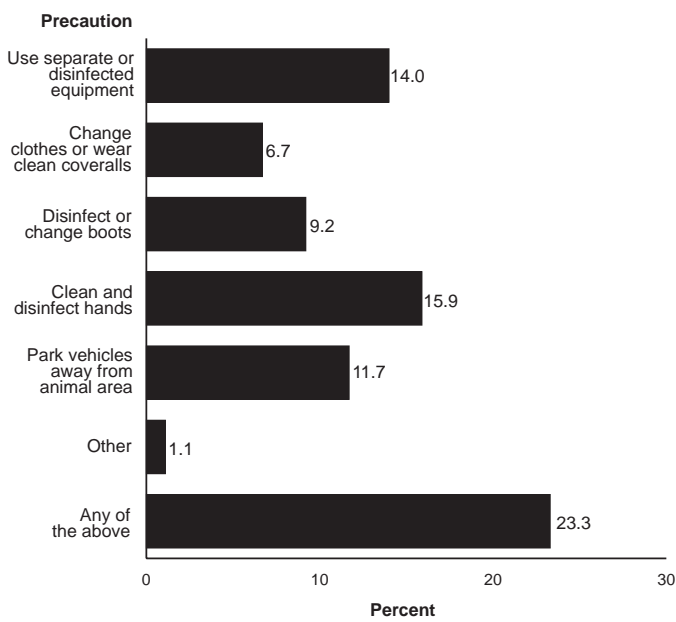
Overall, 65.1 percent of operations separated animals for isolation or infection control. For this study, isolation was defined as prevention of nose-to-nose contact with other equids and of shared feed, water, and equipment.

Large operations (20 or more equids) separated animals for isolation or infection control more often than medium operations (10-19 equids) and small operations (5-9 equids). Large operations also were more likely than small operations to restrict the movement of personnel working with isolated animals. Of operations that isolated animals, 27.8 percent restricted movement of personnel working with isolated animals.

#### *Biosecurity measures for visitors*

Nearly one-fourth of operations required people coming onto the facility to practice at least some form of infection control. Hand washing is an easy and effective method of preventing disease transmission and was the most common control measure used (15.9 percent of operations). In addition, 14.0 percent of operations required the use of separate or disinfected equipment and 11.7 percent required visitors to park vehicles away from animal areas (figure 1).

**Figure 1. Percentage of Operations that Ever Required People (Visitor, Veterinarian, Farrier, etc.) Coming Onto the Equine Facility to Take the Following Infection-Control Precautions**



### Contact with other animals

A few diseases are transmitted to equids via other animal species. For example, the parasite that causes equine protozoal myeloencephalitis is acquired from the feces of opossums. Awareness of contact between equids and other animal species can lead to a more timely response to a disease outbreak. During the 12 months preceding the study, dogs and cats had direct contact with resident equids or their feed on 76.9 and 66.4 percent of operations, respectively. For this study, a resident equid was defined as an equid that spent or was expected to spend more time at the operation than at any other operation, whether or not it was present at the time of the interview. The operation was its home base.

Other domestic species that had direct contact with resident equids or their feed included cattle (43.2 percent of operations) and poultry (18.6 percent of operations). Skunks, opossums, raccoons, and bats had contact with equids or their feed on 25 to 50 percent of operations, indicating that wildlife can be an important potential source of disease.

### Feed and water management

Contamination of feed and water by outside sources is another potential route of infection for equids. Approximately 90 percent of operations fed equids grain/concentrate or an energy source other than hay during the 12 months preceding the study. For operations that fed grain/concentrate, the majority (79.1 percent) of the grain/concentrate was purchased in bags from a retail source. Intact bags should provide a layer of protection against possible contamination by outside sources. Most operations (over 85.0 percent) stored

grain/concentrate in a manner that prevented fecal contamination by mice, rats, domestic and wild birds, livestock, dogs, cats, and other wildlife.

Also during the previous 12 months, the majority of operations (57.5 percent) used a well as the main water supply for equids, while 18.9 percent used a municipal water supply. Among the various water sources used on animal facilities, surface water—such as a pond, river, stream, or cistern—presents the greatest concern of disease exposure because it is difficult to control water quality; 18.1 percent of operations used surface water as the primary water source for equids.

### Insect control

During the insect season of 2005, 88.9 percent of operations practiced some form of insect control. Insect control is vital to the health of equids. Insects transmit disease agents, and large infestations of insects can weaken an equid's immune system. The most commonly used methods of insect control were repellents applied to equids (73.1 percent of operations), water container emptied and refilled with fresh water at least weekly (58.5 percent of operations), and frequent removal of manure and weeds from operation (51.3 percent of operations). In 2005, insecticides were applied in or near equine housing areas on 36.0 percent of operations, and equine face masks were used on 27.2 percent of operations.

### Manure management

Effective manure management can limit fecal-oral contact among equids and other animals. During the 12 months preceding the study, the highest percentage of operations (42.0 percent) disposed of manure by spreading it over land on the operation where no livestock graze. A slightly lower percentage of operations (37.2 percent) applied manure where livestock graze. Categories were not mutually exclusive, and some operations used more than one method of manure disposal. Another common practice for manure management was to allow manure to accumulate or let nature take care of it (32.4 percent of operations). This option for manure management can be viable if an operation has sufficient acreage. Other practices such as selling/giving away manure or hauling it somewhere other than a landfill were more commonly used by large operations than small operations.

### Practices Related to Introduction of Equids on the Operation

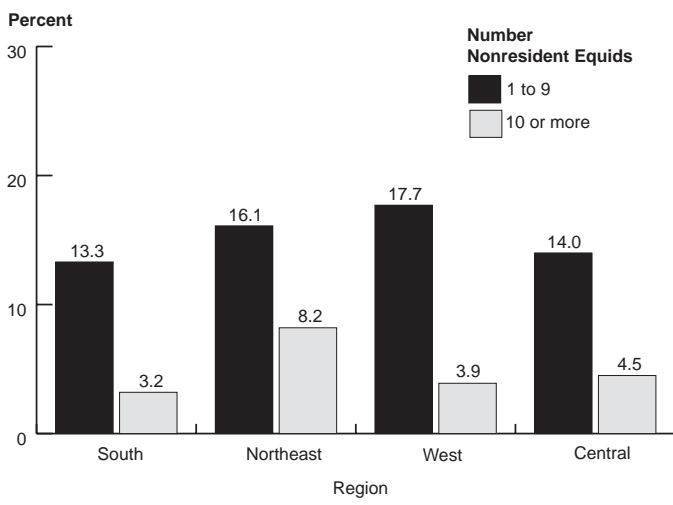
Contact between resident and other equids is one means of disease transmission. A total of 33.6 percent of operations introduced a new animal—either a nonresident and/or new resident—during the previous 12 months. A nonresident equid was defined as an equid that visited the operation for fewer than 30 consecutive

days during the previous 12 months. A new resident equid was defined as a purchased animal, a new boarder, or other acquired equid considered from that point on to be a resident. For operations that introduced equids, approximately one (0.95) nonresident or new resident equid was introduced for each resident equid.

### Nonresident equids

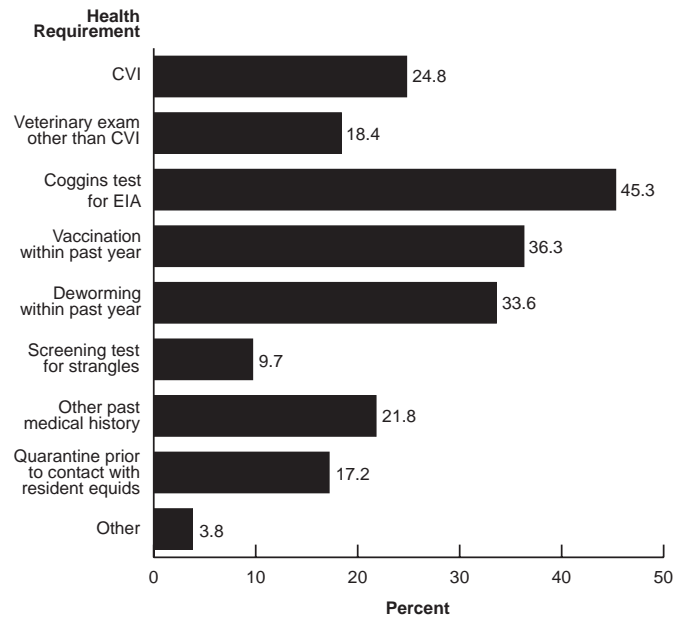
Overall, 19.0 percent of operations had one or more nonresident equids during the previous 12 months. There was little variation in the number of nonresident equids across operations by region. For operations that had nonresident equids, the majority had fewer than 10 nonresident equids visit during the previous 12 months (figure 2).

**Figure 2. Percentage of Operations by Number of Nonresident Equids During the Previous 12 Months and by Region**



Methods that reduce the risk of nonresident equids introducing disease agents to an operation include evaluation of the health status of nonresidents (e.g., through exams, preventive treatments, and/or testing requirements), vaccination and deworming requirements, and quarantine or isolation prior to contact with resident equids. For operations with nonresident equids, the most common health requirements implemented at least some of the time for nonresident equids were a Coggins test for equine infectious anemia (EIA), vaccination, and deworming within the past year (45.3, 36.3, and 33.6 percent of operations, respectively). Approximately one-fourth of operations with nonresident equids (24.8 percent) required a Certificate of Veterinary Inspection (CVI)—also known as an official health certificate—and 18.4 percent required a veterinary examination other than a CVI (figure 3). Quarantine prior to contact with resident equids and screening test for strangles or history of no occurrence in the previous 6 months were not often required.

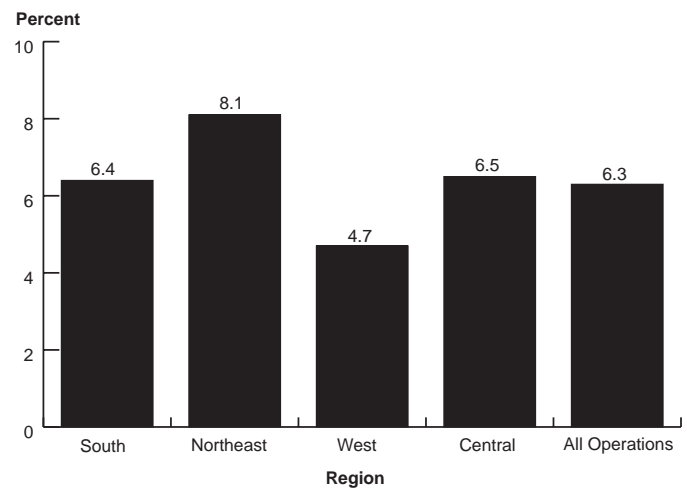
**Figure 3. For Operations with Nonresident Equids that Stayed for Fewer than 30 Consecutive Days During the Previous 12 Months, Percentage of Operations that Always or Sometimes Implemented the Following Health Requirements for the Majority of Nonresident Equids**



### New resident equids

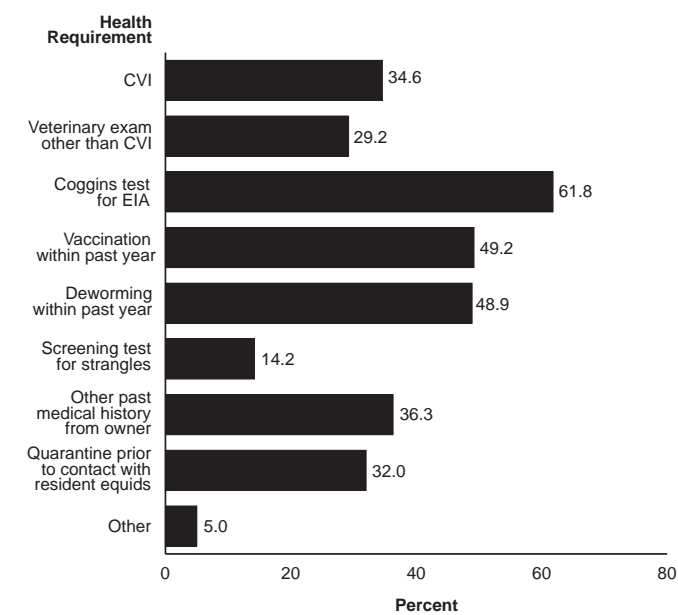
Overall, 21.5 percent of operations added new resident equids during the previous 12 months, and these equids accounted for 6.3 percent of the total number of resident equids (figure 4). Of new resident equids, 70.7 percent were obtained within the same State.

**Figure 4. New Resident Equids Added During the Previous 12 Months as a Percentage of All Resident Equids, by Region**



For operations that added new resident equids during the previous 12 months, the most common health requirements implemented at least some of the time for new additions were a Coggins test for EIA, vaccination, and deworming within the past year (61.8, 49.2, and 48.9 percent of operations, respectively) (figure 5).

**Figure 5. For Operations that Added New Resident Equids During the Previous 12 Months, Percentage of Operations that Always or Sometimes Implemented the Following Health Requirements for New Additions**



## Practices Related to Contact with Equids Off the Operation

Overall, 75.1 percent of operations had resident equids that left the home operation and returned after direct contact with outside equids. Equids that leave the home operation and have contact with outside equids may be exposed to disease agents, and these agents may be introduced to the home operation when the equids return. Isolating returning equids is one way to prevent this type of disease introduction.

Of operations that had resident equids that left the operation and returned after contact with outside equids, the majority (60.6 percent) never isolated returning equids. Just 10.6 percent of operations routinely isolated returning equids at the home operation, and 26.0 percent only isolated returning equids for a cause such as disease or disease exposure. A small percentage of operations (2.8 percent) routinely isolated returning equids before arrival at the home facility.

## Conclusion

Biosecurity and biocontainment control practices can reduce the risk of exposure to disease agents. Key points of a biosecurity plan are ascertaining the health status of new or returning equids, isolating new animals or returning animals at the home facility, supplying clean feed and water, controlling insects, limiting contact between equids and other animals, and implementing infection-control practices for visitors and personnel. Effective biosecurity practices lead to fewer health problems for animals, contribute to a longer and better-quality life, and increase overall productivity by avoiding movement restrictions and reduced use of animals during disease occurrences.

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