



Infectious Upper Respiratory Disease in U.S. Horses: Disease Frequency

Equine infectious upper respiratory disease (IURD) occurs in horses worldwide. This acute clinical syndrome is generally contagious and can be caused by several viruses and bacteria, such as equine influenza virus, equine herpesviruses, equine arteritis virus, and the bacteria *Streptococcus equi* subspecies *equi*.

Usually, horses with IURD develop a fever, cough, and nasal discharge. They also may demonstrate lethargy, reduced feed intake, and enlarged lymph nodes of the head and neck.

Strangles is a specific type of IURD caused by the bacterium *Streptococcus equi* subspecies *equi*. In horses, strangles is characterized most often by purulent nasal discharge, and swelling of the lymph nodes of the head and neck. These lymph nodes may rupture and drain pus. Infected horses also may develop other signs such as fever and breathing and eating difficulties.

The USDA's National Animal Health Monitoring System (NAHMS) collected data on equine health and management practices from a representative sample of equine operations in 28 states from 4 regions¹. For this study, horses were defined as full-size breeds, usually standing at least 14 hands tall (56 inches) at the withers when mature.

Horses were considered residents of an operation if they spent more time at that operation than at any other site.

Overall, 1,034 operations with 3 or more resident horses as of January 1, 1998, and at least 1 horse at the time of the initial interview completed the entire Equine '98 study. Horses housed at racetracks were excluded from this portion of the study.

Participants monitored their resident horses for signs of IURD from March 1, 1998, to February 28, 1999. Diagnoses of IURD by a veterinarian were not required. A horse was considered to have IURD if it had a cough and/or nasal discharge with at least one of the following: fever, depression, decreased appetite, cloudy nasal discharge, or enlarged lymph nodes of the head and neck.

Strangles was considered the cause of IURD if the horse developed an opaque (mucopurulent) nasal discharge with swollen lymph nodes of the head and upper neck.

The number of horses that developed IURD during each quarter (3 months) was recorded, as well as the number of horses that had strangles.

More detailed information on Equine '98 and the methodology used is available in NAHMS Equine '98 *Part I: Baseline Reference of 1998 Equine Health and Management*.

¹ **Western Region:** California, Colorado, Montana, New Mexico, Oregon, Washington, Wyoming.

Northeast Region: New Jersey, New York, Ohio, Pennsylvania.

Southern Region: Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Oklahoma, Tennessee, Texas, Virginia.

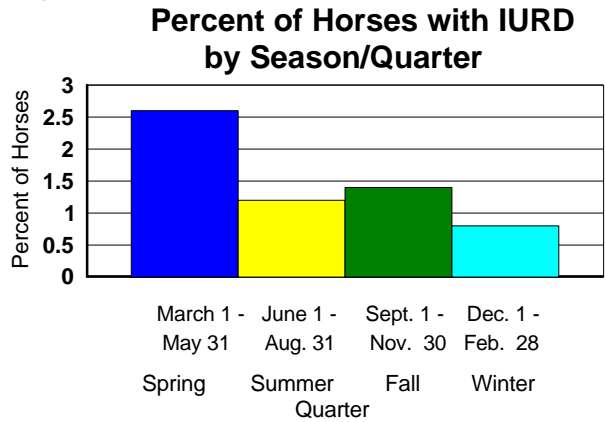
Central Region: Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Wisconsin.

During the Equine '98 study, the majority of operations did not have any horses develop IURD

- An estimated 11.6 percent [Standard Error (SE)=2.0] of operations reported that at least 1 horse had IURD during only 1 quarter of the year. Less than 1 percent of operations reported horses with IURD during 3 or 4 quarters.
- During the year, 17.1 percent (SE=2.3) of operations had at least 1 horse develop IURD, and 4.8 percent (SE=1.3) had at least 1 horse with strangles.
- An estimated 1.5 percent (SE=0.2) of horses per quarter developed IURD during this study, while strangles was observed in an average of 0.3 percent (SE=0.1) of horses during the same time periods.
- Neither the percentage of horses nor the percentage of operations with IURD differed significantly among U.S. regions.
- The percentage of horses with IURD and strangles varied with the season (Figure 1). Overall, horses developed IURD most commonly during the spring quarter, March through May, [2.6 percent (SE=0.6)], and least often in the winter quarter, December through February, [0.8 percent (SE=0.2)]. The greatest percentage of strangles [0.8 percent (SE=0.4)] also occurred during spring.

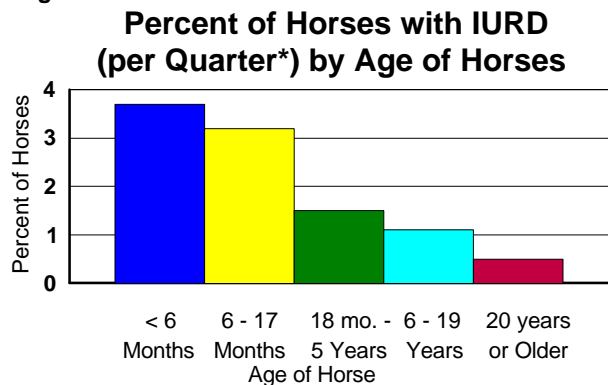
Estimates in this report are provided with a statistical measure of precision called the **standard error**. If the only error is sampling error, then, on average, 95 out of 100 of the intervals created by the estimate plus or minus two standard errors will contain the true population value.

Figure 1.



Age was associated with the likelihood of a horse developing IURD (Figure 2). On average, an estimated 1.1 percent [Standard Error (SE)=0.2] of horses over 5 years of age developed IURD per quarter, compared to 3.7 percent (SE=1.0) of foals less than 6 months old. Young horses may have been at greater risk of contracting IURD because they had not yet developed adequate immunity. When comparing horses younger than 18 months with horses 18 months or older, there was no difference in the average percentage of horses that developed strangles per quarter.

Figure 2.



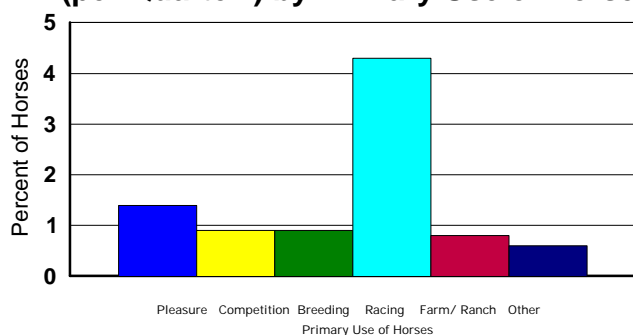
*Averaged over 4 Quarters

The percentage of operations that had at least 1 horse with IURD was greater for large operations (at least 20 horses) than for medium-sized (6-19 horses) or small (5 or fewer) operations. Only 12.4 percent (SE=3.1) of small operations experienced a case of IURD during the year as compared to 38.8 percent (SE=8.0) of large operations. However, an individual horse at a large operation was not more likely to develop IURD or strangles than an individual horse at a small operation.

The higher percentage of at least one case of IURD at large operations may be due to the higher number of horses at risk. Yet, the likelihood of an operation's horses contracting IURD may have been influenced by other factors, including management practices and the age distribution of the horses.

When comparing horses used for different purposes, there was a difference in the average percentage of horses with IURD per quarter (Figure 3). Racehorses housed off-track had the highest rate of IURD [4.3 percent (SE=1.9)]. Since these racehorses were not stabled at racetracks, this rate may not reflect the rate of IURD for the entire U.S. racehorse population.

Figure 3.
Percent of Horses with IURD (per Quarter*) by Primary Use of Horses

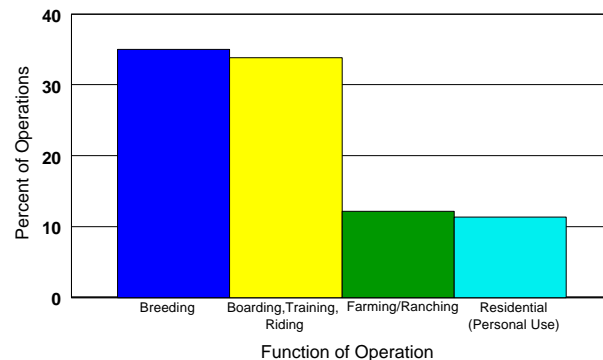


*Averaged over 4 Quarters

The function of the operation where the horses were stabled also was associated with the likelihood that at least 1 resident horse would develop IURD during the study (Figure 4). Horses developed IURD on 35.0 percent (SE=8.6) of operations used primarily for breeding and on 33.9 percent (SE=9.2) of boarding, training, and riding operations. Only 12.2 percent (SE=3.4) of operations where horses were used for farming or ranching and 11.4 percent (SE=2.6) of residential operations where horses were kept for personal use, reported horses with IURD.

The reason that residential operations and farms/ranches reported IURD less commonly than

Figure 4.
Percent of Operations with IURD* by Function of Operation



*Operations were considered to have IURD if at least one horse exhibited clinical signs during the year

other types is not clear. Potential reasons include: these operations may have been smaller, with fewer horses at risk; more of their horses may have been over 17 months old; or their horses traveled less and were therefore less likely to be exposed to infectious agents that cause IURD.

Vaccination of horses against equine influenza virus, equine herpes virus, and *Streptococcus equi* subspecies *equi* (strangles) in the 12 months prior to the study was not associated significantly with the rate of IURD occurrence. It was not clear whether operations that administered vaccinations did so as a preventive measure or to contain a disease problem already present.

Acute infectious upper respiratory disease is a problem encountered on equine operations in the U.S. Many factors may contribute to a horse's risk of developing IURD. Although there are vaccines against several common infectious agents of IURD, vaccination does not prevent all cases of IURD.

For more information on NAHMS or the Equine '98 study, contact:

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