

Vaccination Practices on U.S. Equine Operations

Equine owners have several options for preventing and controlling infections in their equids. These options include reducing the likelihood of exposure to infectious agents and optimizing resistance to disease. Resistance to infectious diseases can be enhanced through vaccination and by improving overall health through multiple means, including meeting nutritional requirements and parasite control. Vaccination can reduce the likelihood of disease occurring in exposed animals. If exposure to infectious disease agents occurs, the degree of immunity, amount of exposure, and virulence of the disease agent all play a role in the outcome. The American Association of Equine Practitioners recommends that all equids receive vaccines to protect them against tetanus, eastern and western equine encephalitis (EEE/WEE), West Nile virus (WNV), and in most regions, rabies. These vaccines are considered “core” because they are thought to be safe and effective and because there is a real potential that equids can be exposed to the disease agents, which could lead to fatal illness.

One of the goals of the U.S. Department of Agriculture’s (USDA) National Animal Health Monitoring System (NAHMS) Equine 2005 study was to estimate equid vaccination practices.

For the Equine 2005 study, NAHMS 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.

***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

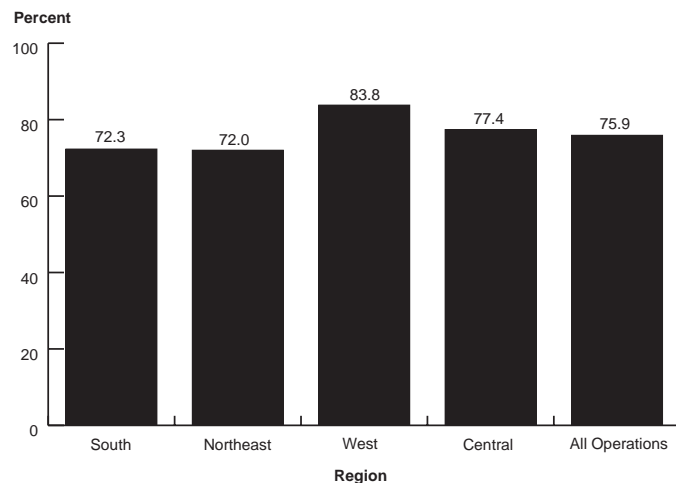
Central: Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, and Wisconsin

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. 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.

Vaccination

Overall, 75.9 percent of operations gave some type of vaccine to resident equids during the previous 12 months. A higher percentage of operations in the West region gave at least some vaccines to resident equids compared to operations in the South and Northeast regions (figure 1).

Figure 1. Percentage of Operations that Administered Any Vaccine to Resident Equids During the Previous 12 Months, by Region



Operations with a primary function of farm/ranch or residence with equids for personal use were less likely to administer vaccines to equids than operations with a primary function of boarding/training, breeding farm, and “other” (table 1).

Table 1. Percentage of operations that administered any vaccines to resident equids during the previous 12 months, by primary function of operation:

| Percent Operation Primary Function | | | | |
|---------------------------------------|------------------|----------------|--|-------|
| Boarding/ Training | Breeding Farm | Farm/ Ranch | Residence with Equids for Personal Use | Other |
| Percent | | | | |
| 96.8 | 89.7 | 67.8 | 74.9 | 91.2 |

Overall, veterinarians were the primary source of vaccines for operations that administered any vaccine to resident equids during the previous 12 months (76.0 percent of operations). On half the operations (50.3 percent) a veterinarian administered the majority of vaccines. As operation size increased so did the percentage of operations that used operation personnel to administer the majority of vaccines (table 2).

Table 2. For operations that administered any vaccines to resident equids during the previous 12 months, percentage of operations by person who administered the majority of vaccines and by size of operation:

| | Percent Operation Size of Operation (Number of Equids) | | | |
|---|---|-------------------|--------------------------|-------------|
| | Small (5-9) | Medium (10-19) | Large (20 or More) | All Ops. |
| Person | Pct. | Pct. | Pct. | Pct. |
| Veterinarian | 54.1 | 44.4 | 39.2 | 50.3 |
| Operation personnel (including operator) | 29.6 | 39.1 | 43.4 | 33.3 |
| Equid owner (not operator) | 15.8 | 16.4 | 17.4 | 16.1 |
| Other | 0.5 | 0.1 | 0.0 | 0.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Operations vaccinating one or more equids

Overall, 94.4 percent of operations that administered one or more vaccines to resident horses during the previous 12 months knew which vaccines were given. Of these operations, 44.5 percent vaccinated against rabies, 72.5 percent against influenza, 75.6 percent against EEE/WEE, 81.3 percent against tetanus, and 85.3 percent against WNV. Before 1999, WNV was not recognized in the United States. Subsequent to the recognition of WNV, several vaccines became available for use in equids, the first under a conditional license in summer 2001. This killed vaccine with an adjuvant (Fort Dodge) was fully licensed in 2003. Since then, several other WNV vaccines have been licensed for use in equids, including one in 2004 (Merial canary pox WNV vaccine) and one in 2006 (Intervet chimera vaccine combining WNV and yellow fever vaccine virus).

There were regional differences in vaccination for several diseases. For example, 48.6 percent of operations in the Northeast region, 38.0 percent in the South region, 28.8 percent in the Central region, and 18.4 percent in the West region vaccinated one or more resident equids against rabies. A higher percentage of operations in the Northeast and Central regions (17.1 and 17.0 percent, respectively) vaccinated against Potomac horse fever compared to operations in the South and West regions (7.2 and 6.1 percent, respectively). The difference in vaccine use across regions may be due to a perceived difference in the likelihood of exposure to causative agents or a difference in vaccination recommendations from veterinarians in the various regions.



APHIS photo by Charles Kerlee

Reasons for Not Vaccinating

All operations were queried about the use of eight specific vaccines: influenza, strangles, rhinopneumonitis (herpesvirus), rabies, WNV, EEE/WEE, tetanus, and equine viral arteritis (EVA). Operations reported which of these eight vaccines were administered to equids less than 1 year of age, equids more than 1 year of age, and broodmares. When the operation reported that a specific vaccine was not administered, a follow-up question offered eight alternatives as to why the vaccine was not used: concern of adverse reaction to vaccine, vaccine considered ineffective, little risk of disease exposure, not recommended by veterinarian, financial constraints on horse expenditures, thought important but did not get around to it, effort and cost of vaccination outweighed financial and other benefits of vaccination, or reasons other than those listed above.

Operations that gave vaccines but not the specified vaccines

Reasons given by operations that gave some vaccines but not the specified vaccines followed similar patterns across the eight types of vaccines. The highest percentages (ranging from 39.9 to 58.5 percent) reported that little risk of disease exposure was the reason for not giving each of the eight vaccines. For all but the WNV vaccine, the second highest percentage of operations (18.2 to 31.8 percent) reported not recommended by the veterinarian as the reason for not giving the specified vaccines, followed by effort and cost of vaccination outweighed financial and other benefits of vaccination (7.0 to 11.2 percent of operations). For the WNV vaccine, the second highest percentage of operations (13.3 percent) cited the reason for not giving the vaccine was effort and cost outweighed financial and other benefits of vaccination, followed by concern of adverse reaction (10.9 percent of operations).

In June 2003, the Centers for Veterinary Biologics (CVB)—under the auspices of the USDA-Animal and Plant Health Inspection Service-Veterinary Services—conducted an investigation into reported concerns that the only WNV vaccine available for equids at the time (the killed vaccine with an adjuvant) was associated with pregnancy loss. On June 25, 2003, CVB released their findings from the investigation, which concluded that there was no clear evidence the vaccine posed

a risk to pregnancy in equids. Subsequently, a study conducted at Texas A&M and published in the “Journal of the American Veterinary Medical Association” in December 2004 concluded that pregnancy rates and fetal outcome among vaccinated mares were similar to unvaccinated mares. It is possible that some equine owners still have concerns about the WNV vaccine and its effect on pregnant mares despite the fact that subsequent investigations appeared to find no correlation between the vaccine and pregnancy rates.

Except for WNV, strangles, and EVA vaccines, the remaining rankings of reasons for not giving specific vaccines were financial constraints on horse expenditures, thought important but did not get around to it, concern of adverse reaction, vaccine considered ineffective, and “other.” These reasons accounted for 15 percent or less of responses. For strangles vaccine, there was a somewhat higher concern about an adverse reaction than for the other vaccines, while for EVA vaccine the concern about an adverse reaction was lower.

Operations that gave no vaccines

For operations that did not vaccinate, almost two-thirds (58.9 to 65.0 percent) reported that little risk of disease was the reason for not vaccinating. The next most common reasons for not giving vaccinations were consistent across vaccines: effort and cost of vaccination outweighed financial and other benefits of vaccination (12.3 to 13.3 percent of operations), thought important but did not get around to it (7.8 to 12.3 percent of operations), and financial constraints on horse expenditures (5.2 to 5.8 percent of operations). None of the other reasons for not vaccinating exceeded 3.2 percent of operations.

Movement patterns of equids on nonvaccinating and vaccinating operations

For operations that did not vaccinate any equids, 14.9 percent had nonresident equids come onto the operation and stay for fewer than 30 consecutive days. For operations that vaccinated one or more equids for at least one disease, 20.3 percent had nonresident equids come onto operation and stay for fewer than 30 consecutive days.

Approximately 4 of 10 operations (40.5 percent) that did not vaccinate any equids had resident

equids leave the operation and return. Twenty-nine percent of operations that did not vaccinate any equids transported equids off the operation by vehicle. For these operations, travel by vehicle was within the respective State on 94.5 percent of operations, to adjacent States on 13.3 percent of operations, and beyond adjacent States on 5.7 percent of operations. In comparison, on operations that did vaccinate, 94.8 percent of operations transported equids within State, 37.1 percent to adjacent States, and 12.7 beyond adjacent States (table 3).

Table 3. For operations that transported resident equids by vehicle off the home operation and returned during the previous 12 months, percentage of operations by destination and by vaccination-use status of operations:

| Destination | Percent Operations | |
|------------------------|-------------------------------|------------------------------|
| | Vaccination Status | |
| | Vaccinated One or More Equids | Did Not Vaccinate Any Equids |
| | Percent | Percent |
| Within State | 94.8 | 94.5 |
| Adjacent States | 37.1 | 13.3 |
| Beyond adjacent States | 12.7 | 5.7 |

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#N454.1206

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