

Estimation of Vaccine Use Based On National Animal Health Monitoring System (NAHMS) Equine 2005 Study

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Abstract:

Few estimates of the use of equine vaccines in the general population exist. One of the goals of the United States Department of Agriculture Animal Plant Health Inspection Service, Veterinary Services, National Animal Health Monitoring Systems (NAHMS) Equine 2005 study was to provide estimates of the use of various management strategies to control infectious diseases in equids in the USA including vaccine use. A stratified random sample of farms with 5 or more equids was selected by the National Agricultural Statistics Service in 28 States in the USA. An in-person interview was conducted with participants to collect equine health and management information based on a pretested survey instrument in summer of 2005. From these data weighted estimates of vaccine use, sources of equine vaccines and reasons for not giving selected vaccines were generated. By having asked several questions that were similar to questions in the NAHMS 1998 study, trends in vaccine use could be examined

Introduction:

Infection-control strategies for equids include inducing specific immunity through use of vaccines against selected disease agents, optimizing innate immunity, and reducing or eliminating exposure to disease agents. Estimates of vaccination use in the general equine population are limited. Vaccination use can be driven by multiple factors including likelihood of exposure, cost of vaccine, availability of an effective vaccine, and likelihood for adverse outcome from use of the vaccine. The National Animal Health Monitoring System (NAHMS) has conducted two studies of equine health practices in the USA, one in 1998 and one in 2005. Determination of trends in equine health-related practices such as vaccination was one of the goals of the NAHMS studies.

Materials and Methods:

The target population for the 28 states^a included in the NAHMS Equine 2005 study represented 78% of equids and 78.6% of premises with 5 or more equids in the USA, based upon the 2002 Census of Agriculture. A review of the State-level 2002 Census of Agriculture as well as the NASS 1999 equine estimates was performed prior to the NAHMS 2005 study. Some changes were noted but the benefit of being able to compare summary data from the same States lead to the inclusion of the previously used 28 States.

The emphasis of the NAHMS Equine 2005 study was collection of information regarding the demographics of the operations (function of the operation, use of equids, and number of equids) included in the study along with the methods of infection control used for equids. A survey was developed based on the goals of the study and was pretested prior to administration of the survey to the selected

participants. A stratified random sample of participants was selected from the National Agricultural Statistics Service (NASS) list of farms. Only operations with 5 or more equids were eligible to be sampled. The data collectors were NASS enumerators who received training on the survey objectives and the areas of emphasis in the NAHMS Equine 2005 questionnaire in order to optimize uniformity of data collection. Data were then validated and weighted estimates were generated. For purposes of comparison the data from operations with 5 or more equids in the NAHMS Equine 1998 study were summarized. The detailed results of the Equine 1998 study are available at <http://www.aphis.usda.gov/vs/ceah/ncahs/nahms/equine>.

Results:

The data for the Equine 2005 on-farm study were collected from July 18 to August 12, 2005, by in-person interviews with equine owners/operators. The average time for administration of the questionnaire was 68 minutes. Of the 4,002 operations selected to participate in the NAHMS Equine 2005 study, 72% provided equine health and management data, 12% were out of business or had no resident equine, 16% either could not be reached to request participation in the survey or refused to participate once contacted. For the purposes of this study a resident was defined as an equid that resided more of the time on this operation than any other operation in the previous 12 months, e.g. this is the equids home.

In the Equine 2005 study, 75.9% (SE 0.9%) of operators indicated they had vaccinated resident equids (some or all resident equids) in the 12 months prior to the interview. Operations with a primary function of farm/ranch or residence with equids for personal use were less likely to have administered vaccines to equids than were operations with a primary function of boarding/training, riding stable, or breeding farm. The percent of operations that vaccinated equids was similar to that of the NAHMS Equine 1998 for those operations with 5 or more equids where 75.1% (SE 2.4%) of operations indicated vaccination of some or all of their resident equids in the previous year.

The primary source of vaccines was the veterinarian, with 76% of operations that gave vaccines obtaining them from a veterinarian. For operations that vaccinated any of their equids, the veterinarian was the one who administered the majority of the vaccines on just over 50% of the operations. The equine operations personnel were more likely to administer vaccines to equids as the size of the operation (number of equids) increased.

In the NAHMS Equine 2005 study, the largest percentage of operations (that gave any vaccines and knew what vaccines their equids were given) indicated they vaccinated resident equids against West Nile Virus (WNV). For operations that gave any vaccines and knew what vaccines were given, 85.3% indicated they had vaccinated resident equids against this disease in the previous 12 months, 75.6% of the operations indicated they had vaccinated one or more equids against Eastern/Western Equine Encephalitis (EEE/WEE), and 81.3% indicated having vaccinated one or more equids against tetanus, 72.5% of operations reported vaccinating some or all of the resident equine against flu, and 44.5% of operations indicated having vaccinated equids against rabies. By comparison based on the NAHMS Equine 1998 study the largest percent of operations vaccinated against tetanus, Eastern/Western encephalitis and flu.

In the NAHMS Equine 2005 study, the largest percentage of operations (that did not give a selected vaccine to equids) indicated the primary reason for not giving each of the listed vaccines was little risk of disease exposure. In the next most frequently listed reasons were “not recommended by a veterinarian” and “effort and cost outweighed benefit”. The percentage of operators indicating a concern of adverse reaction to the vaccine as a reason for not vaccinating was higher for WNV vaccination compared to herpesvirus, rabies, EEE/WEE, tetanus, and Equine Viral Arteritis (EVA). Similarly, the percentage of operations indicating the vaccine was considered ineffective as the primary reason for not vaccinating was higher for WNV than for herpesvirus, rabies, EEE/WEE, tetanus, and Equine Viral Arteritis.

Conclusions:

The NAHMS Equine 1998 and equine 2005 studies reported similar percentage of operations that vaccinate some or all of their equids. Several vaccines appear to be the ones most commonly used in both studies, these included vaccines for tetanus, EEE/WEE and influenza. WNV was not recognized in the USA until 1999, 1 year after the Equine 1998 study was conducted. There was no vaccine available to protect equids against WNV until the summer of 2000 and then it was available only with a conditional license. As of 2005, there were two licensed vaccines for protection against WNV. Based on the NAHMS Equine 2005 study, the most commonly used vaccine for equids was that used to protect them against WNV.

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Footnote

^a Alabama, California, Colorado, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Montana, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Virginia, Washington, Wisconsin, Wyoming.