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Farm Bill National Animal Disease Preparedness and Response Program (NADPRP)
Final Report- June 2025

Project Title:
Increased biosecurity and disease prevention for the horse industry

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Submitted By:
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Project Profile
RECIPIENT ORGANIZATION: American Association of Equine Practitioners
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VS PROGRAM MANAGER: Angela Pelzel-McCluskey

Project Methods:

The American Association of Equine Practitioners (AAEP) and Equine Disease Communication Center (EDCC) set forth to increase biosecurity and infectious disease prevention in the horse industry by identifying current gaps in biosecurity knowledge and developing and tailoring outreach efforts to audiences in all aspects of the horse industry. With NADPRP program support AAEP and the EDCC developed tools to improve disease recognition and practical biosecurity, while communicating the importance of biosecurity to horse industry constituents.

The work plan included creating biosecurity information and procedures for distribution through established communication portals at the EDCC, the AAEP and American Horse Council and horse owner organizations and publication media. A biosecurity risk assessment tool and instructional videos were created for owners, veterinary practitioners and event managers to plan for disease prevention at facilities and events. The EDCC continues to prepare the industry to react to domestic and foreign disease threats thereby improving horse health and preventing unnecessary economic loss in the horse industry.

The following objectives were used to organize, complete and distribute the biosecurity educational information created during the project.

Objective 1: Define specific gap(s) in biosecurity knowledge:

- Survey horse owners and veterinarians to identify the current gaps in appropriate biosecurity and use this information to create biosecurity recommendations for the horse industry.
- Communicate recommendations tailored for specific areas of the horse industry including but not limited to racing, horse shows, farms, stables, trail rides and horse events.
- Update factsheets for endemic diseases and development new factsheets for African Horse Sickness, Contagious Equine Metritis and Piroplasmosis.

Objective 2: Develop the tools to educate the horse industry about biosecurity:

- Create biosecurity continuing education (CE) information (digital brochures, presentations, infographics, videos and risk calculator) identifying risk factors for foreign and domestic infectious diseases.
- Develop facility specific biosecurity plans, which includes presentations, infographics and videos on "how to" apply biosecurity for events, horse use and common stable or farm environments.
- Create biosecurity plan templates for horse use situations and locations.

Objectives 3: Distribute tools for biosecurity education:

- Distribute biosecurity information, which includes biosecurity plan templates and CE information, to horse owners, event managers and veterinarians via the American Horse Council (AHC), AAEP, State Animal Health Officials (via USAHA), AVMA, and EDCC websites.
- Distribute biosecurity CE information, factsheets and videos using horse media publications, social media, horse organization websites, virtual webinars and at owner and veterinary meetings.

Objectives 4: Demonstrate how to apply biosecurity plans:

- Present a working biosecurity plan at equine owner and veterinary meetings by lectures, handouts, seminars, videos and virtual meetings.
- After biosecurity plan distribution, resurvey of constituents at meetings and via website survey tools to assess knowledge and awareness of biosecurity compared to the original survey.
- Based on the final survey, create a report on the status of biosecurity in the horse industry.

The initial surveys were constructed by the AAEP infectious disease committee and distributed by Matrix Group in Lexington, KY to horse owners and veterinarians. Initial analysis of horse owner and veterinarian demographics in relation to horse use for each survey question was completed by the Matrix Group. A third survey was sent to State Animal Health Officials was administered by the EDCC. The follow-up surveys for horse owners and veterinarians included the same questions and were distributed and analyzed the same way as the first surveys.

Results:

Survey results were published in three manuscripts were written by Drs. White, Pelzel-McCluskey, and Flynn (the manuscripts are attached to this final report). The biosecurity videos were constructed by Dr. Flynn reviewed by Dr. White and produced by the United States Equestrian Federation (USEF) and posted on the EDCC biosecurity page (see the following URL's).

-https://www.youtube.com/watch?v=QEETbpYJDis
-https://www.youtube.com/watch?v=X_TDTg6h6JI
-https://youtu.be/bWvwK8Jd3gI?si=05Ozta81eEqSI8Y4
-https://youtu.be/xgqfEOXoTis?si=TD3_vDXJDkFHQvcK
-https://youtu.be/HJW8NyzT83E?si=sYRB6ljqp8bgN4nM
-https://youtu.be/sbBdSr8mnoQ?si=RUsJRAHkm0zK26Ye

The biosecurity information and disease pages on the EDCC website were reviewed by the AAEP infectious disease committee and organized and posted by the EDCC communication manager. Results from the surveys and the EDCC disease postings were presented to the National Equine Health Industry Stakeholder Call NEHISC, the American Horse Council, the AAEP and the United State Animal Health Association. Updates for the NADPRP were sent to the AAEP infectious disease committee, the EDCC advisory committee and industry stakeholder representatives. Articles and website posts on biosecurity and disease mitigation were written and distributed by the EDCC communication manager. Details of the activities, events, collaborations and deliverables were listed quarterly on the NADPRP performance reports and included in the following list of project accomplishments by objective from April 2022 to March 2025.

Objective 1: Define specific gap(s) in biosecurity knowledge:

- *Summary of major accomplishments including significant activities, deliverables and outcomes*
    - Updated the biosecurity and disease information on EDCC website,
    - Renovation of the EDCC website to improve viewer access use for future biosecurity continuing education.
    - Completion of the horse owner, veterinarian and SAHO surveys.
    - Discipline specific and significant differences in the knowledge and horse use for biosecurity and disease control identified and summarized.
    - The expertise of the AAEP Outbreak Prevention and Response subcommittee has identified the topics essential to fill-in the gaps in biosecurity knowledge in the horse industry and continues to be prioritizing how the new information will be delivered to the industry.
    - Completion of the follow-up biosecurity surveys for owners and veterinarians (see Addendums 1 and 2).
- *For all major accomplishments: describe tangible products that were produced.*
    - Created horse owner and veterinarian biosecurity survey instruments.
    - Horse owner biosecurity knowledge and awareness defined and published in *Animals*; https://doi.org/10.3390/ani13223550.
    - Published veterinarian biosecurity survey manuscript in AAEP Annual Convention Proceeding, Vol 70, December 2024.
    - Publication of SAHO survey results in JAVMA; https://doi.org/10.2460/javma.24.04.0248.-July 2024
    - Definition and use of reportable diseases published in horse owner media.
    - The Equine Guelph "Biosecurity Risk Calculator" was revised based on biosecurity surveys.
    - Follow-up owner and veterinarian surveys successfully completed. (see addendums 1 and 2).
- *For all major accomplishments, describe collaborations or partnerships.*
    - The expertise and collaboration of the AAEP infectious disease committee was instrumental in completing the project objectives.
    - Horse owner and veterinarians volunteered to pretest the biosecurity surveys.
    - Partnering with the United Stated Equestrian Federation to renovate the EDCC website.
    - American Quarter Horse Association, United States Equestrian Federation, American Horse Council, American Association of Equine Practitioners sent out emails to their members to announce and encourage survey participation.
    - The United State Animal Health Association encouraged SAHO's to participate in the biosecurity survey.
    - Equine Network publications (Equus, The Horse, EquiManagement etc.) distributed invitation to participate in the horse owner survey.
    - Educational partnership between the EDCC and Equine Guelph to create the "Biosecurity Risk Calculator".

Objective 2: Develop the tools to educate the horse industry about biosecurity:

- *Summary of major accomplishments including significant activities, deliverables and outcomes.*
    - Renovated the EDCC website to be more user friendly and to highlight biosecurity and infectious disease control.
    - Posting of the video recordings from the National Equine Health Industry Stakeholder Calls (NEHISC) on the EDCC website.
    - Reviewed and updated EDCC factsheets for Glanders, Influenza, Salmonellosis, EEE, EHV, Rabies, Strangles, WEE, WNV, Rhodococcus equi, Coronavirus, VEE, Potomac

Horse Fever, Lyme Disease, Vesicular Stomatitis, Viral Hepatitis, Epizootic Lymphangitis, African Horse Sickness, Tetanus, Lawsonia, Leptospirosis, EIA, Piroplasmosis, Anaplasmosis, Pigeon Fever, and Screwworm factsheets.
    - Published a manuscript entitled *"Cross-Sectional Survey of Horse Owners to Assess Their Knowledge and Use of Biosecurity Practices for Equine Infectious Diseases in the United States,* based on the owner survey; https://doi.org/10.3390/ani13223550.
    - Worked with Canadian Animal Health Surveillance System to report Canadian disease outbreaks.
    - Publication of "Assessment of Biosecurity for equine infectious diseases in veterinary practice" AAEP proceedings Vol 70, 2024.
    - Publication of "Survey of state animal health officials reveals lack of personnel and resources to manage equine infectious disease outbreaks**"** JAVMA July 2024; http://doi.org/10.2460/javma.24.04.0248.
    - Presented the current status of biosecurity in the equine industry to USAHA and AAEP.
    - Owner, veterinarian and SAHO survey results made into PowerPoint presentations.
    - Created prevention and response website pages for the EDCC website.
    - Created and posted new individual infectious disease pages on the EDCC website.
    - Added revised biosecurity information to the EDCC website.
    - Made biosecurity videos with USEF.
    - Completed horse owner and veterinarian follow-up biosecurity surveys.
    - EDCC completed an agreement with Guelph Equine and finalized of the algorithms and biosecurity recommendations for the Guelph "Biosecurity Risk Calculator".
    - Presented results of the veterinarian biosecurity survey at the AAEP annual convention in December 2024.
- *For all major accomplishments: describe tangible products that were produced.*
    - Made the EDCC website user friendly for future distribution of the educational resources.
    - Survey results summarized, distributed and delivered by presentations.
    - Updated horse owner disease factsheets.
    - Press release for how to mitigate an EHV outbreak.
    - Made videos for applying biosecurity at events and horse shows.
    - Updated the Guelph Equine "Biosecurity Risk Calculator".
    - Three publications describing how biosecurity is used (or not) in the equine industry.
- *For all major accomplishments, describe collaborations or partnerships.*
    - Partnered with the United Stated Equestrian Federation to renovate the EDCC website.
    - Working with the AAEP infectious disease committee Outbreak Prevention and Response subcommittee.
    - Creation and publication of the EDCC alerts (EDCC HealthWatch) by the Equine Network. (https://www.equinenetwork.com).
    - Partnered with the American Horse Council for survey and information distribution.
    - Co-production of six biosecurity videos with USEF.
    - Collaboration with Equine Guelph to revise the "Biosecurity Risk Calculator".

Objective 3: Distribute tools for biosecurity education:

- *Summary of major accomplishments including significant activities, deliverables and outcomes.*
    - Distributed biosecurity information by presentations to SAHOs and Veterinarians.
    - Distributed biosecurity information by article in the horse owner media (articles and news).
    - Created and posted new individual infectious disease pages and biosecurity information on the EDCC website.
    - Updated the EDCC website disease pages and biosecurity recommendations as a major source for distribution of CE included with EDCC disease alerts.

- Distributed press releases on biosecurity mitigation of an outbreak in Virginia via EDCC website.
- Distribution of biosecurity videos with USEF.
- Supported and launched the Equine Guelph's "Biosecurity Risk Calculator".
- Distribution of the Manuscript entitled *"Cross-Sectional Survey of Horse Owners to Assess Their Knowledge and Use of Biosecurity Practices for Equine Infectious Diseases in the United States*; https://doi.org/10.3390/ani13223550
- Distribution of "Assessment of Biosecurity for equine infectious diseases in veterinary practice" AAEP proceedings Vol 70, 2024.
- Distribution of "Survey of state animal health officials reveals lack of personnel and resources to manage equine infectious disease outbreaks**"** JAVMA July 2024; http://doi.org/10.2460/javma.24.04.0248.
- Presented the survey results to the American Horse Council, State Animal Health Officials and NEHISC.
- Presented results of the biosecurity surveys to the American Horse Council members and the AHC's Health, Welfare and Regulatory committee.
- Participated in panel discussion on biosecurity at the American Horse Council meeting in June 2023.
- Reported vesicular stomatitis situation reports in EDCC alerts.
- Participated in podcast on disease and use of biosecurity with Stephanie Griffey Podcasts.
- Initiated distribution of horse owner biosecurity awareness through publication of horse owner survey results via the horse owner media (Equine Network).
- Reported EDCC and NADPRP project updates to the USAHA equine committee in 2023 and 2024.
- Demonstration of EDCC operation and available information to Canadian Animal Health Surveillance System and worked to identify areas of cooperation.
- Press release distributed for Equine Guelph's the "Biosecurity Risk Calculator".
- Posted monthly NEHISC's on the EDCC website.
- Submitted potential presentation and publication for the AAEP 2025 annual convention; "How to use the EDCC to submit an alert about a case or outbreak".
- "Understanding reportable diseases" published in the Blood Horse (January 2025).

- *For all major accomplishments: describe tangible products that were produced.*
  - Made the EDCC website user friendly website for current and future distribution of the educational resources.
  - PowerPoint presentation of survey results reporting horse owner level of biosecurity knowledge.
  - Press releases on mitigation of an EHV outbreak.
  - Published results of the horse owner survey in *Animals*.
  - Published results of the veterinarian biosecurity survey by AAEP
  - Published biosecurity use and understanding by SAHOs in JAVMA.
  - Distributed biosecurity information via presentations at USAHA and AAEP.
  - Presented results of the veterinary biosecurity survey at the AAEP annual convention December 2024.
  - Launched the "Biosecurity Risk Calculator" which has free access.
  - "Understanding reportable diseases" published in the Blood Horse-January 2025.
- *For all major accomplishments, describe collaborations or partnerships.*
  - Partnered with the United Stated Equestrian Federation to renovate the EDCC website.
  - Publication of the EDCC alerts (EDCC Health Watch) by publications within the Equine Network (https://www.equinenetwork.com).
  - American Horse Council support for information distribution.
  - Webinar on "biosecurity at events" by AAEP.

- Partnered with USEF for biosecurity video production.
- Increased communication with the Canadian Animal Health Surveillance System.
- Press releases submitted and published via American Horse Publications, Equine Network (EquiManagment, The Horse, and Equus magazines).
- The EDCC with Equine Guelph reviewed and revised the "Biosecurity Risk Calculator" which has free access.
- Reported updates to the Canadian Animal Health Surveillance System on current EDCC status.

Objective 4: Demonstrate how to apply biosecurity plans:

- *Summary of major accomplishments including significant activities, deliverables and outcomes.*
  - Updated the EDCC website disease pages and biosecurity recommendations as a major source for distribution of CE.
  - Plans for specific biosecurity topics completed with USEF.
  - Recommendations made during panel discussion on biosecurity in June 2023 at the AHC.
  - Distribution of press releases on how to apply biosecurity.
  - Distribution of biosecurity videos to horse owner media and on EDCC website.
  - Population of the EDCC YouTube channel with biosecurity videos and National Equine Health Industry Stakeholder Call virtual recordings. https://www.youtube.com/channel/UCbax-F4mbpXvfsDMQ41wgng
  - Podcast on biosecurity for horse owners.
  - Webinar on event biosecurity at events by AAEP.
  - Use of press release to illustrate EHV-1 outbreak mitigation.
  - Biosecurity videos provide how to information for biosecurity before, during and after horse shows and events.
  - EDCC news page is posting biosecurity information including the NEHISC.
- *For all major accomplishments describe tangible products that were produced.*
  - Press releases on mitigation of an EHV-1 outbreak.
  - Podcast to distribute biosecurity information.
  - Publication of information from horse owner survey in horse owner media.
  - News articles on the EDCC website.
  - Publications for owner, veterinarian and SAHO survey results in scientific journals.
  - Revised "Biosecurity Risk Calculator" demonstrating how to improve biosecurity at facilities.
- *For all major accomplishments describe collaborations or partnerships.*
  - Partnered with the United Stated Equestrian Federation to renovate the EDCC website.
  - Publication of the EDCC alerts by the Equine Network (EDCC HealthWatch) in owner media and survey results by publications within the Equine Network (https://www.equinenetwork.com).
  - American Horse Council support for information distribution.
  - Webinar on event biosecurity at events with AAEP.
  - Guelph Equine educational partner with the EDCC.

Discussion and Conclusions

This is the first NADPRP-funded project supporting the equine industry and is the first to identify the level of horse owner knowledge about disease risk and biosecurity practices. It was evident from the horse owner survey and corroborated with the responses from veterinarian and state animal health official surveys that there is lack of awareness or concern about the risks for infectious diseases in horses. The most important findings are included in the following list.

- There is a general lack of horse owner understanding of disease transmission with nearly 70% indicating they think there is a low risk at events where horses intermingle.
- The veterinarian is by far the most trusted source of medical and disease prevention information suggesting veterinarians have the opportunity to distribute biosecurity information to owners.
- Some horse owner biosecurity practices are significantly different based on horse use which may allow targeting of biosecurity education to specific groups.
- Based on the survey results owners are not prepared to manage a disease outbreak and this is echoed by a majority of veterinarians who indicated their clients are not very or not at all prepared to deal with an infectious disease.
- Lack of temporary isolation for introduction of new horses to resident horses has the greatest risk for disease transmission.
- The current rate of vaccination does not adequately protect enough of the horse industry.
- Veterinarians are limited in providing information for a biosecurity plan due to lack of time, lack of training, owners' concern about expense and owner lack of interest.
- The lack of compliance for managing biosecurity for a disease outbreak is the greatest challenge for veterinarians and SAHOs.
- 50% of responding SAHO's indicated they do not have adequate resources to manage disease outbreaks.
- Biosecurity practices which could immediately help prevent disease spread include reliance on temperature monitoring, isolation of new horses at facilities, identifying risks of horse mingling, entry requirements such as vaccination and health certificates at events, and an emphasis on having biosecurity plans for facilities and events where horses co-mingle.
- The best format to provide biosecurity information for owners is from websites while veterinarians favor virtual (on demand) presentations and current written information.

Part of the project objectives was to create a format or template for creating a biosecurity plan. Rather than creating a single plan, several descriptions of biosecurity for different horse uses were placed on the EDCC biosecurity website (https://equinediseasecc.org/biosecurity). Additionally, videos were produced to guide owners in planning for biosecurity before, during and after events such as horse shows. The recommendations for farms and facilities are included in the "Biosecurity Risk Calculator" available in the EDCC website (https://www.thehorseportal.com/biosecurity-risk-calculator-tool/) and at Equine Guelph. Each category in the calculator has recommendations and suggestions for improving biosecurity. All these sources provide information about what is needed to prevent disease spread prior to and during an infectious disease outbreak.

Currently there is no objective measures of the effectiveness of biosecurity in preventing an equine disease outbreak. Most biosecurity plans are customized from human or livestock use and experience from managing disease outbreaks. However, recent reports for outbreak management of equine herpesvirus outbreaks support the common use of isolation for affected and exposed horses and increased monitoring and testing for signs of disease have shown to be effective to mitigate disease spread. These experiences have shown an overriding need for any biosecurity plan to include continuous and transparent communications to all constituents to help maintain compliance and reduce the spread of misinformation during a disease outbreak.

The limitations of this study include the potential bias when using an email based survey which had no control over the demographics of the respondents and a low response rate for the both the owner and the veterinarian surveys. Still in the owner survey, the proportion of states aligned with the estimated horse population in each state suggesting a good geographic representation of the US horse industry. Future surveys of horse owners would benefit from using the member demographic information from horse organizations when analyzing the results. Although the statistical analysis used to evaluate significant differences in response to horse use categories, further analysis using a multivariable method may have elucidated differences and deficiencies in biosecurity use by horse owners.

The results of this project suggest that the most effective way to improve disease prevention is through an industry coordinated marketing of biosecurity benefits. In a very diverse industry with many areas of interest, preventing infectious diseases is one thing everyone can agree on, but without knowledge of disease risks, it is not often a primary concern. Owners often don't respond to biosecurity information until it is needed for a disease outbreak. Therefore, marketing based on outbreak scenarios and stories will provide the best way to stimulate interest in improving disease prevention and mitigation before a disease outbreak. These examples should include and illustrate risks for disease and the potential economic savings of practicing biosecurity. In summary the constant threat of disease transmission needs to be engrained in every horse owner's checkoff list every day.

See attached files

- Addendum 1- results and data comparing the owner surveys
- Addendum 2- results and data comparing the veterinarian surveys
- Publications for the owner, veterinarian and SAHO surveys