

Survey of state animal health officials reveals lack of personnel and resources to manage equine infectious disease outbreaks

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OBJECTIVE

The purpose of the study was to assess the challenges faced by state animal health officials (SAHOs) when managing equine disease outbreaks.

METHODS

A survey was conducted to assess SAHOs' collaboration with horse owners and practicing veterinarians to provide biosecurity and infection disease control. It was sent to 180 email addresses listed in the Equine Disease Communication Center website database. The responses in each category for each question were tabulated and reported as a percentage.

RESULTS

There were 72 survey responses from 45 states. The number of states responding suggested that the results represent SAHOs' current opinions. Fifty percent of responders identified the lack of resources and training for equine health management and equine reportable disease prevention and control. There is a lack of owner compliance in managing disease outbreaks, and boarding stables, horse shows, and racing facilities require the most resources for outbreak management. The survey indicated on-site communication as the most effective for managing an outbreak, and the Equine Disease Communication Center is to be a valued resource for alerts and disease information.

CONCLUSIONS

At the state level, there is a lack of needed personnel and resources to effectively manage an equine infectious disease outbreak. Furthermore, failure of veterinary and owner compliance in reporting and managing equine infectious diseases allows disease spread.

CLINICAL RELEVANCE

Lack of sufficient resources for management of reportable diseases will potentially result in disease spread with a negative impact on horse health and the equine industry.

Keywords: disease, equine, outbreaks, resources, survey

The responsibilities of state animal health officials (SAHOs), including state veterinarians, are defined by the individual state's statutes and regulations. State animal health officials are responsible for regulating the importation and movement of animals into and within the state and for protecting the animals within the state through regulatory disease control/eradication programs and emergency preparedness and response programs. In general terms, the SAHO is responsible for ensuring the health of the equid herd.

To manage and control infectious diseases of horses, SAHOs collaborate with private practitioners and USDA veterinarians to prevent and respond to regulatory diseases, namely those that pose a significant public health, animal health, environmental health, or economic impact. This requires communications with local, state, and federal officials and reliance on accredited veterinarians to detect and diagnose reportable disease cases.¹ Once a disease is reported, each state has specific laws and mandates that direct the SAHOs' responsibilities (eg, the Code of Virginia²) for identifying and confirming reportable equine infectious diseases that threaten the horse industry. Once confirmed, the State Veterinarian utilizes state regulatory authority to initiate infection control, which can include an official quarantine with required biosecurity measures to

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help prevent disease spread. State statutes provide the SAHOs the authority to issue and release an official quarantine as well as enforce the critical biosecurity measures mandated by the quarantine to prevent disease spread. For each equine infectious disease detected, SAHOs conduct epidemiologic investigations to identify biosecurity risk factors to be addressed in disease control efforts for that specific facility and identified population of horses. Further, contact tracing is utilized to identify and locate exposed horses to establish required quarantines and report risks to the horse industry and public.³ Management of specific equine viral diseases is reported in individual outbreaks in Australia, the UK, Spain, and the US.⁴⁻⁸ State animal health officials oversee outbreaks of reportable diseases in the US and are a source for biosecurity information for veterinarians and horse owners. State animal health officials also offer veterinarians guidance on protocols for sample collection, diagnostic testing, isolation of sick and exposed horses, cleaning and disinfection, or quarantine issuance and release.⁹ Additionally, SAHOs may provide communication and messaging for veterinarians, horse owners, and the general public related to an equine infectious disease situation, control efforts, and prevention protocols.^{7,10}

Veterinarians are responsible for reporting reportable diseases, which are frequently not the same for each state. The response to a confirmed disease is also different between states and depends on whether the state classifies a reportable disease as actionable or monitored. Veterinarians and in some states the horse owners are required to submit information about all reportable diseases to a state and/or federal animal health official.

In response to a reported disease, SAHOs may communicate directly with owners and veterinarians and, depending on the risk of disease spread, may use state websites to publicly announce equine infectious disease situation updates to the public.⁹ Historically, there was no required communication between states or the varied segments of the equine industry during a disease outbreak.

Because of the lack of coordination in sharing disease information during an equine herpesvirus outbreak in 2011^{7,9} and in an effort to improve communications about infectious disease outbreaks, industry organizations and state veterinarians collaborated to create the Equine Disease Communication Center (EDCC). The goal was to facilitate information sharing about disease outbreaks and risks of infectious disease spread in North America.

As part of the National Equine Health Plan,¹¹ the EDCC initiated an alert system for infectious disease outbreaks in May of 2015. Once an equine disease is reported to and confirmed by the EDCC, it is posted to the EDCC website and Facebook page, and an email is sent out to individuals who have signed up for email notifications, including horse owners, veterinarians, and SAHOs. The number of alerts has increased from 300 to 500 alerts/y in 2018 through 2022 to more than 800 in 2023. In addition to sending out alerts, the EDCC communicates information

about reportable diseases from veterinarians, horse owners, or the public media to state veterinarians. The EDCC website also has disease and biosecurity information for use by horse owners and veterinarians. Each month a summary of diseases in North America is posted on the website news page. Since initiation of alerts in May 2015, there have been more than 1.8 million visits to the EDCC website.

This report summarizes results of a survey study conducted to identify SAHO challenges in responding to cases of reportable equine infectious diseases. Survey methodologies and findings are provided along with discussion of identified challenges and how industry can support the SAHOs in protecting and promoting equine health.

Methods

A survey was conducted to assess SAHOs' collaboration with horse owners and practicing veterinarians regarding biosecurity and infection disease control protocols for equine reportable diseases. Oversight of the survey (**Supplementary Material S1**) was completed by the American Association of Equine Practitioners with review by their infectious disease committee's outbreak, prevention, and response subcommittee. The survey was created with website-based survey software (Zoho; Zoho Corp Pvt Ltd). The survey was composed of 24 questions, 1 of which was the state of origin for the SAHO. The survey request was delivered in November 2022 with a second request in January 2023, via email using 180 SAHOs addresses in the EDCC database, which included subscribers in the alert email list, the submitter list in the alert database, and the list of state veterinarians on the EDCC website. The survey was available for participation for a total of 3 months.

Statistical analysis

The responses were tabulated and graphically reported as percentages for each of the possible response in each question by the survey software. Some of the questions requested "select all that apply," thus making the final percentage reported potentially more than 100%. When the responses were ranked, the percentage of each rank and the average percentage of all 5 ranks were reported.

Results

A total of 72 survey responses from 45 states were received. All participants responded to all questions. When asked whether their state has adequate resources to manage an outbreak, 50% said no, and 38% indicated that training for equine diseases or biosecurity was not supplied by their state agency (**Figure 1**). A state equine advisory group was utilized to discuss state equine issues by 18% of respondents. Survey respondents indicated that they most often seek equine biosecurity and disease guidance predominately from USDA staff, another SAHO, and academic subject matter experts (**Figure 2**).

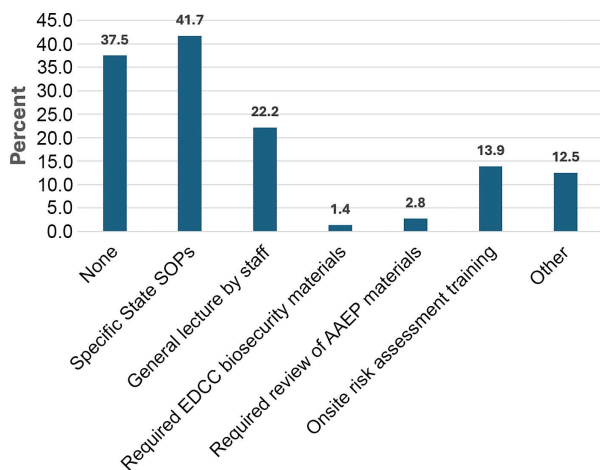


Figure 1—Percentages of responses (72 respondents) to the following question: “What type of equine training is provided to state animal health officials (SAHOs) in your state? (Select all that apply.)”

State animal health officials responded that 82% of veterinary practitioners reported reportable diseases all (26%) or most of the time (56%). Furthermore, 62% of SAHOs report cases to the EDCC. The most common reasons for not submitting cases to

the EDCC were concerns about confidentiality, that it takes too much time, and that complete information about the cases is not always available. For the SAHO respondents who acknowledged utilizing the EDCC website, the majority of the reasons for its use were for accessing disease alerts, the disease reporting, and disease factsheets (**Figure 3**).

Regarding participation in continuing education on biosecurity and outbreak management the survey found that 99% of the respondents would attend virtual training, 88% would access modules on the subject, and 79% would attend in-person training if offered in their state. State animal health officials indicated their staff managed 0 to 5 (31%), 6 to 15 (51%), 16 to 25 (5%), and > 25 (13%) equine outbreaks in the past 3 years.

State animal health officials indicated that the top 5 requests by private practitioners during outbreak were for guidance on (1) reportable disease regulations, (2) biosecurity measures, (3) diagnostic testing and sampling, (4) enforcement of isolation/quarantine, and (5) criteria for exposed horses.

When identifying the type of facility that required the most SAHO resources during an outbreak, 88% selected boarding stables, followed by horse shows and racetracks (**Figure 4**). State animal health officials indicated that the primary way to effectively

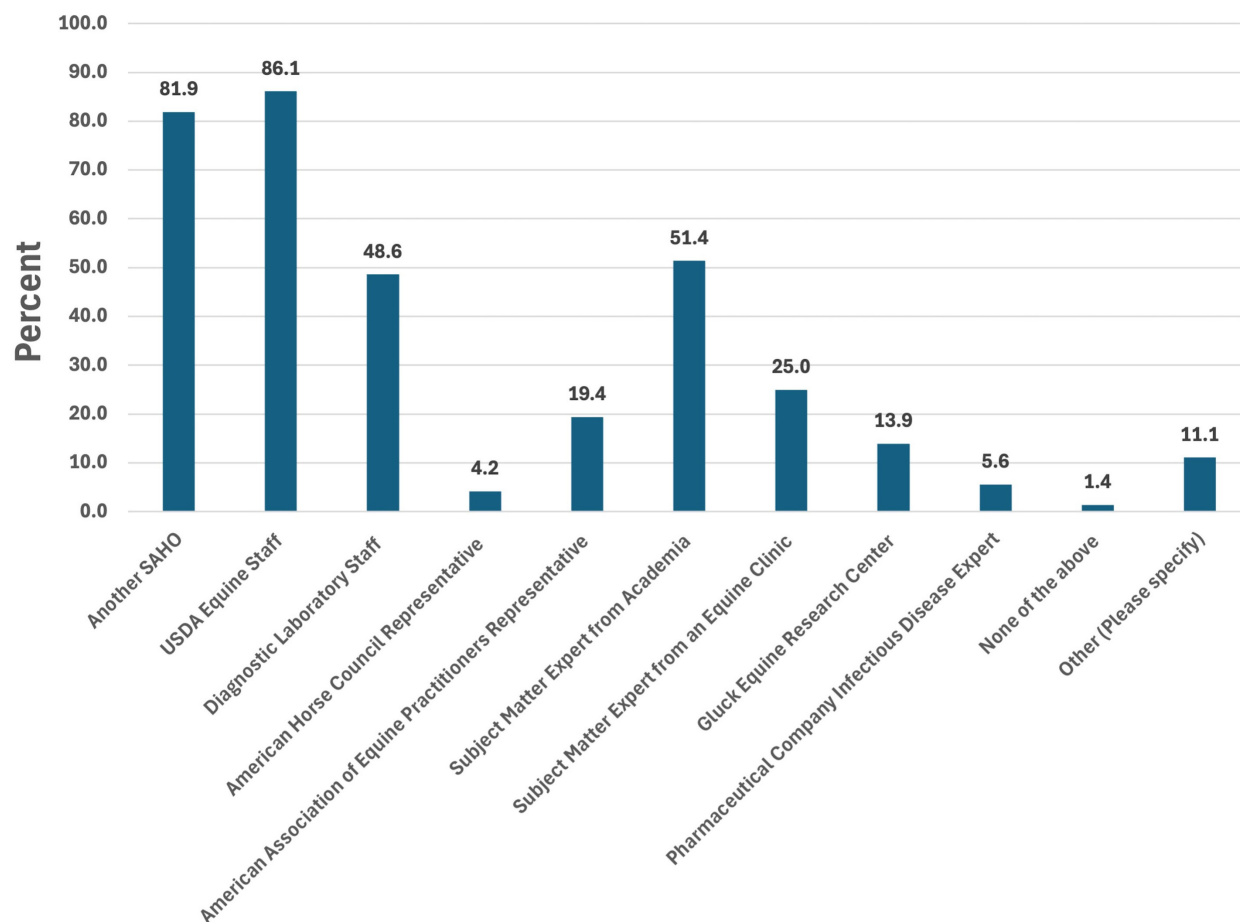


Figure 2—Percentages of responses (72 respondents) to the following question: “Who have you contacted for biossecurity or equine infectious disease guidance? (Select all that apply.)”

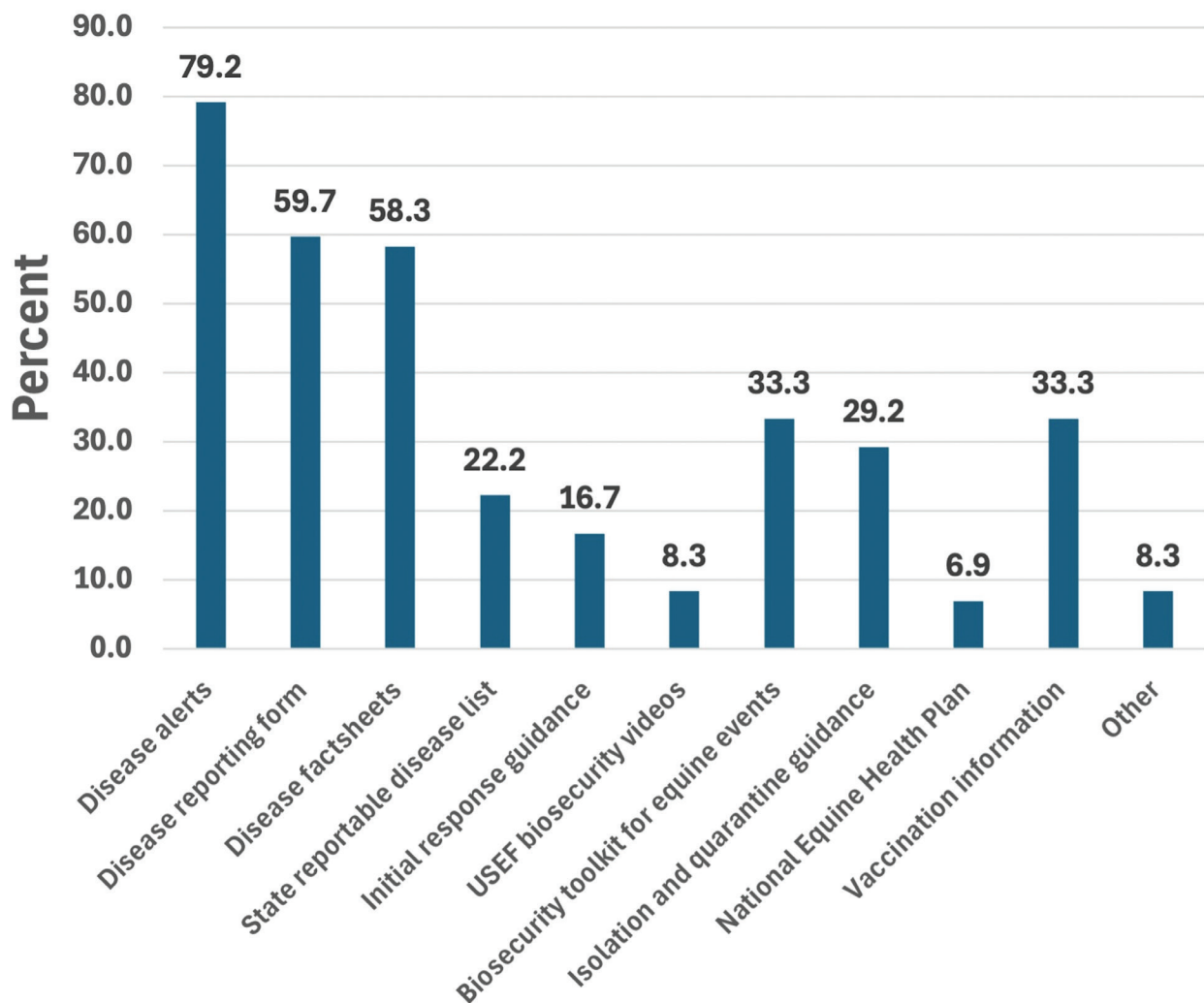


Figure 3—Percentages of responses (72 respondents) to the following question: “Have you or your staff utilized any of the following from the Equine Disease Communication Center (EDCC)? (Select all that apply.)”

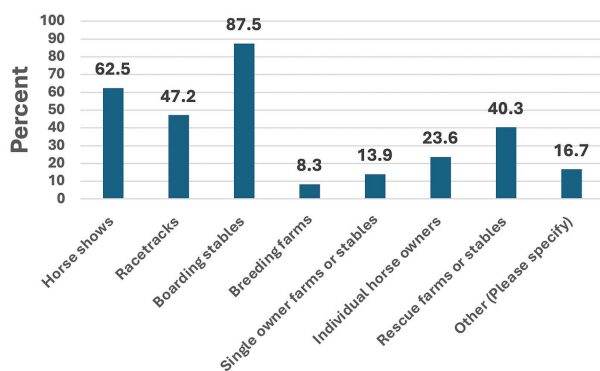


Figure 4—Percentages of responses (72 respondents) to the following question: “Which of the following equine facilities require the most resources (such as personnel, financial, communications, etc) for the management of an equine regulatory disease outbreak by your office? (Select the top 3.)”

disseminate timely disease outbreak and biosecurity information was through the EDCC and state website (**Figure 5**).

State animal health officials rated rumors in the equine community and a lack of understanding about disease risk as the top challenges when managing a disease outbreak (**Figure 6**). The survey also revealed the SAHOs ranked communications 4.5 of 5 and on-site SAHO 3.9 of 5 presence as more effective than educational programs (3.4/5), educational information in the media (2.9/5), signage at the quarantine site (3.3/5) and penalty for noncompliance (3.4/5).

State animal health officials scored veterinary practitioners’ basic knowledge of biosecurity procedures in their practice an average of 3.8 of 5 from ranks of 2 (4%), 3 (29%), 4 (47%), and 5 (20%) and an average of 3.2 of 5 for their implementation of basic biosecurity procedures from ranks of 1 (3%), 2 (15%), 3 (47%), 4 (28%), and 5 (6%). Sixty-three percent of SAHOs help stakeholders create biosecurity protocols and consider personal communication (80%) and site visits (68%) the most effective way to communicate biosecurity protocols.

When respondents were asked for an opinion about “What is the greatest biosecurity need(s) for

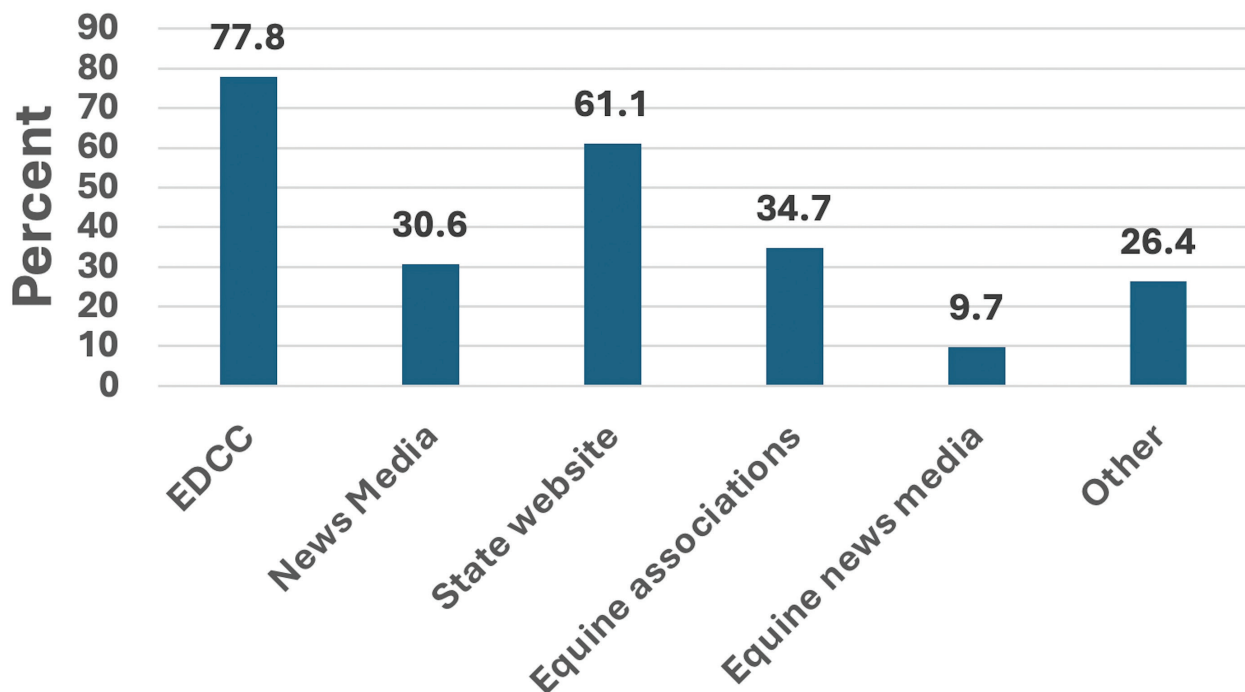


Figure 5—Percentages of responses (72 respondents) to the following question: “What are the most effective tools for sharing accurate and timely information regarding active outbreaks, general disease information, biosecurity information? (Select all that apply.)”

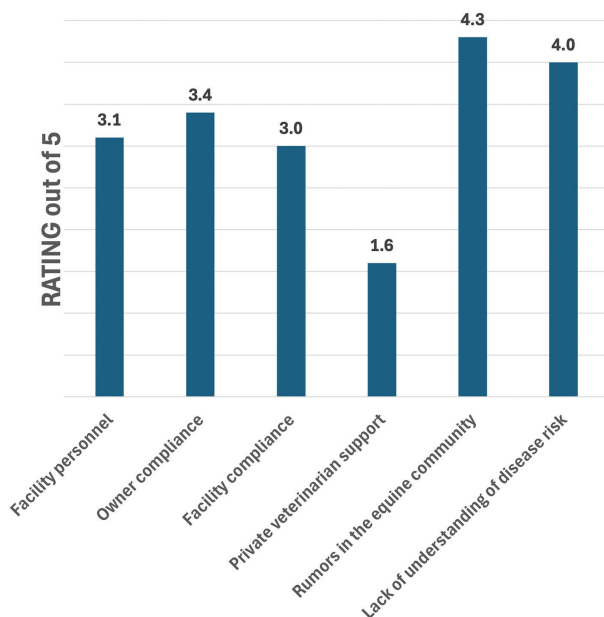


Figure 6—Percentages of responses (72 respondents) to the following question: “How would you rate the following challenges in implementing and overseeing a mandatory equine quarantine for each of the following? (Scale of 1 to 5; 1 = least challenging, 5 = most challenging.)”

controlling equine infectious disease in your state?” the following were representative of the most common written responses, which are a summary of topic areas selected by the authors and not prioritized or ranked:

- Owner compliance/awareness
- Education
- Knowledge of biosecurity protocols
- Communication
- Complete information on horse movement and exposure
- Disease- and venue-specific guidance
- Isolation of traveling horses

Discussion

This study was completed to help understand the current challenges SAHOs face when implementing biosecurity and infection control measures while managing an equine infectious disease outbreak. The SAHO respondents highlighted the challenges associated with the following:

- Lack of adequate staffing and resources for equine disease outbreaks
 - Lack of training of SAHOs on equine biosecurity and diseases
 - Lack of reporting of reportable equine diseases
 - Compliance and enforcement of biosecurity measures
 - Guidance and informational needs from practitioners
- Recent owner¹² and veterinarian (NA White, DVM, MS, DACVS, American Association of Equine Practitioners, unpublished data, 2022) opinions indicated similar challenges related to biosecurity, including lack of owner compliance and lack of knowledge of infectious diseases and disease risk. Historically, outbreaks have not been contained for a variety of factors, one being a lack of a biosecurity plan and lack of personnel to deal with large numbers of horses at facilities.^{5,6,10,12}

Nationally, the conversation about veterinary care for horses focuses on the shortage of large animal practitioners¹³; however, shortage of SAHOs with the training and expertise in equine regulatory medicine is rarely mentioned. Results of this survey suggested there is a lack of adequate personnel for responding to and reporting equine diseases. This creates the potential for delays or nonresponse to a disease, further risking the health of the nation's equine herd. Stakeholders should be concerned that only 50% of surveyed SAHOs responded that they have adequate personnel to manage an outbreak and 38% of respondents indicated that training for equine was not supplied by their state agency (Figure 1). Even though personnel resources may be limited, the survey shows that SAHOs have a desire to participate in continuing education for biosecurity and equine infectious disease, with the large majority favoring virtual delivery and availability by educational modules.

There was an adequate response to the survey, with 72 out of 180 SAHOs responding and 45 states represented.¹⁴ This is similar to the numbers of states sending submissions to the EDCC each year (42 in 2023). The knowledge and awareness of the equine reportable disease lists by practitioners and equine owners within a state may be a direct result of the lack of personnel or lack of training to deliver the necessary outreach and horse owner or veterinarian training. A further challenge is the variation in state equine reportable diseases lists across the country. Not surprisingly, wide variation in biosecurity recommendations is reported in other organizations and animal species.¹⁵

Challenges are created when the list of reportable equine diseases varies by state or when the actions taken by states are not standardized. States often categorize diseases as reportable and actionable, reportable and monitored, and not reportable. We speculate that a lack of understanding of these variations could be responsible for the lack of reporting, as evidenced by survey results where SAHOs indicated 26% of attending veterinarians always submit reportable diseases and another 56% responded most of the time. With the development of the EDCC, some equine practitioners have reported reportable diseases directly to the EDCC without submitting information to the state veterinarian. This has enabled the EDCC to report this information to SAHOs for confirmation and a regulatory response if necessary. To be effective in preventing disease spread, the timely and accurate reporting to regulatory authorities is essential.

Survey responses suggested practitioner and owner reluctances to report diseases may stem from concerns related to potential disease control measures disrupting facility or event activity. This is supported by the responses in Figure 6 that indicated poor owner compliance and lack of understanding of disease risk as the chief challenges to implement biosecurity.

The EDCC was established to facilitate communications to veterinarians and the public to help limiting disease spread. State animal health officials (62%) in a majority of states report cases to the

EDCC. State animal health officials also chose the EDCC as the best way to share accurate and timely disease and biosecurity information. Reasons for not submitting include concerns about confidentiality of the information, that submission takes too much time, and that complete information is not always available. The EDCC uses an online submission form, which has increased reporting since 2018. Additionally, the EDCC will accept information by email or as state press releases and will use the comments exactly as submitted by SAHOs to help maintain confidentiality and accuracy while posting the needed message to constituents.

Equine veterinarians also need resources and information sharing on the topics of biosecurity, diagnostic testing, and guidance on management of disease quarantine populations. These needs would be confounded if there is a shortage of state personnel and lack of currently available subject specific materials.

A recent survey of owners as well as this SAHO survey highlight the varying perspectives on biosecurity relative to equine infectious disease control and prevention. However, these surveys identify the need for increased awareness and education for disease risks of the various equine facilities (eg, farms, boarding facilities, racetracks, horse shows) and necessary compliance with biosecurity control measures. Fifty percent of SAHOs suggest they are unable to meet these needs due to the lack of personnel, and equine practitioners have limited time and resources to address biosecurity needs primarily because of the equine veterinarian shortage.¹³

Facilities with the greatest opportunity for horses to commingle are reported to require the most resources likely because of the frequent movement of horses and frequent entry of new horses into the environment. State animal health officials indicated that owner compliance is the biggest challenge with biosecurity recommendations. This is likely reflected in the owners' opinion that travel and having their horses in contact with nonresident horses are of minimal risk for contracting diseases.¹²

The goal of this survey was to identify the challenges in using biosecurity by SAHOs for horses. Email provides increased response speed and is more effective than postal surveys, but overall quality is not shown to be different.⁸ Although the response rate was considered adequate, limitations of the survey included the lack of knowledge of the demographics based on email addresses causing sampling bias, which could have skewed the results. Online surveys can suffer from sampling bias, which can be decreased with a standardized and validated survey tool that provides comparisons with other studies.¹⁶ Our study was not validated; doing so would require larger and repeated surveys.

This survey provided insight into the needs of SAHOs that service the equine industry in the US. The equine industry should be concerned that 50% of the SAHOs cited lack the personnel and resources to effectively respond to an equine infectious disease outbreak. Furthermore, this is complicated by the lack of both veterinary and owner compliance

potentially allowing disease spread. Ultimately, the solution is education for all stakeholders to increase awareness of disease risk and to practice biosecurity especially needed for horses traveling to facilities and events where there is increased horse-to-horse contact and proximity. Additionally, owners need to be educated about the critical role SAHOs play in protecting their horses.

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Disclosures

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Supplementary Materials

Supplementary materials are posted online at the journal website: avmajournals.avma.org.