

Merck Animal Health Equine Respiratory Update

IN COLLABORATION WITH THE UNIVERSITY OF CALIFORNIA, DAVIS SCHOOL OF VETERINARY MEDICINE

Focus on Diagnostics: The Important Role You Play in Monitoring Disease Trends

It has been said in a number of ways, but the biosurveillance program is an exceptional example of “get good out” when you “put good in.” The information you submit with each sample is helping our industry better understand and manage current and emerging infectious respiratory disease in the horse. It’s a powerful cause and one we are proud to partner on with you. The information received to-date has provided valuable insights on disease management and emerging trends, as well as overturned some long-held beliefs, including the notion that predominantly young horses get infectious upper respiratory disease.

Our work is not finished. **We implore you to remain diligent in your efforts to help us collect complete and accurate historical information with each sample you submit.** This information provides valuable real time data — from a grassroots perspective — throughout the United States. There is tremendous value in performing retrospective analysis and data mining with this information, but it is only as valuable as the ability to link it with laboratory results. This is why you continue to hear “Don’t Forget the Respiratory Surveillance Questionnaire.”

Better Diagnostics Elevate Your Professional Status

In today’s environment, timely and accurate diagnostics are critical to disease containment. In addition to identifying the causative pathogen(s), knowing recent travel history and vaccination status can help us understand how disease is transferred and the efficacy of current vaccination protocols. It also emphasizes the importance of biosecurity measures.

Dr. Stephanie Benner, an ambulatory veterinarian in Sellersville, Pa., says that her previous approach to respiratory disease was to test only if she was concerned with strangles or herpesvirus.

“Now that I’m testing more, I’m finding out what these things are,” says Dr. Benner. “I’ve had several situations that didn’t look serious at all, but because that horse was in a boarding environment, the owner or manager had to know, ‘what is this?’”

In a serious outbreak situation, such as the one Dr. Benner found herself in last December (EHM outbreak in Pennsylvania stable), her fears were eased thanks to timely diagnostics and vaccination. She had two client horses in the barn – both had been vaccinated with Flu Avert® I.N. and Prodigy® from Merck Animal Health.

“Both horses were stabled between horses that became sick, yet neither vaccinated horse got sick. One horse was older and immune compromised so we were really nervous. Samples were tested and came back negative. This was an instance where you just don’t know – the research has to be done.”

“And, in many cases it’s not always what you think. It elevates me as a professional to be able to provide a confirmed diagnosis. And I don’t have to charge my clients a lot to do it.”

- Stephanie Benner, V.M.D.

(Editorial note: Because the horses mentioned by Dr. Benner were asymptomatic and did not meet the biosurveillance case selection criteria, the samples were sent to the state lab for screening purposes.)

“Put good in, get good out.”

- J. Robinson

Why I Love the Biosurveillance Program

- Stephanie Benner, V.M.D.

- It’s fast. The fastest lab I’ve ever dealt with
- Convenient and very easy to use
- Elevates me as a professional
- Makes diagnostics more affordable for my clients
- Alters how I manage disease (if something highly contagious)
- More testing equals more information, which means better service for my patients (and clients)

MERCK
Respiratory Surveillance Questionnaire
To be completed for ALL submissions.

Veterinarian / Client:
Horse ID: _____ Age: _____ Sex: _____ Breed: _____
Occupation (Circle one): Racing Show Pleasure Boarding
Owner: _____ Phone #: _____

Vaccination history (if known):

Disease	Vaccine product lot and date	Date vaccinated or time since last dose	No. of times given per year
EHM (EH)			
Strangles			
H. caps			

How many days has the horse been showing signs or symptoms?
Has the horse been hospitalized during the past 14 days?
How many other horses on the premises are showing signs?

CLINICAL SIGNS AND SEVERITY AT THE TIME OF TESTING

Sign	None observed	Mild	Medium	Severe
Nasal discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eye discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loss of appetite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depression/ lethargy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CNS signs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

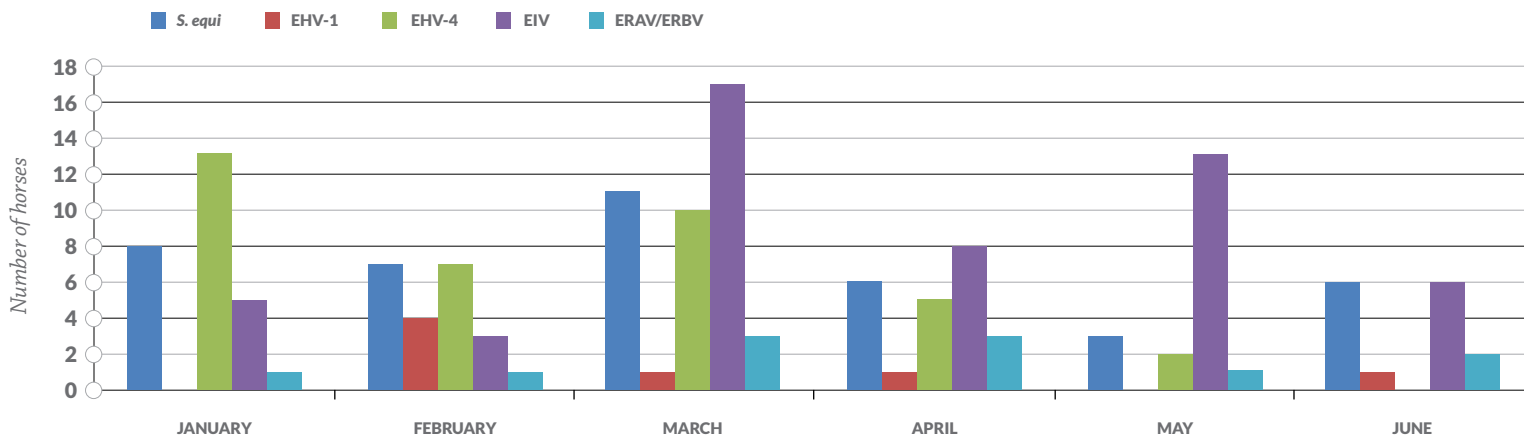
Please make any additional comments on the back of this form.

Respiratory Surveillance Questionnaire

Please continue to gather and document patient information, including signalment, clinical signs, vaccination status and recent travel history.

Disease Trends from January to June 2016¹

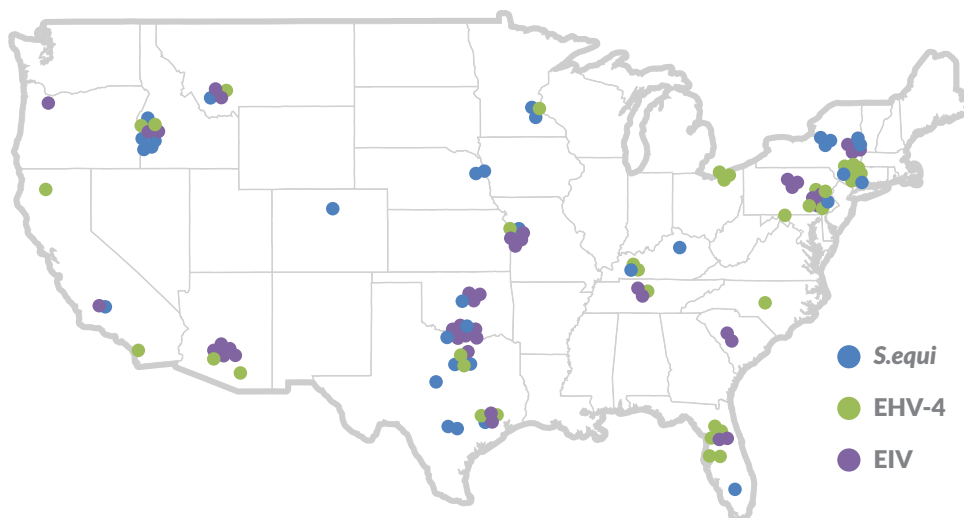
Sample submissions continue to increase, and for the first time since 2013, EIV has substantially outpaced EHV-4 and *S. equi* in total positive cases during the same 6-month timeframe. A total of 422 samples were submitted from January to June 2016, as compared to 314 samples submitted during the same timeframe in 2015. The most significant differences are reflected in the increased cases of EIV and EHV-4 during that time period – a trend we continue to see. Overall, about 35 percent of total samples submitted tested positive for one of the six primary pathogens (*S. equi*, EHV-1, EHV-4, EIV, ERAV/ERBV).



From January to June 2016, EIV was the most prevalent infectious upper respiratory disease reported followed by *S. equi* and EHV-4. This marks a notable difference in disease trends. Not since 2013 have we seen EIV significantly outpace both EHV-4 and *S. equi* during the January to June timeframe.

Demographic Summary	EIV (52 Cases)	<i>S. equi</i> (39 Cases)	EHV-4 (37 Cases)
Median Age	5 years Range: 2 months – 23 years ≥3 years (63%)	6 years Range: 6 weeks – 21 years 3-10 years (54%)	3 years Range: 3 weeks – 22 years 1-5 years (57%)
Breed	Quarter Horse	Quarter Horse	Thoroughbred; Quarter Horse
Discipline	Pleasure	Pleasure; show	Show/performance

The above table provides a summary of primary demographic parameters for the three major pathogens (January-June 2016).¹



This map shows positive EIV, *S. equi* and EHV-4 cases from January to June 2016.¹

Practice Tip

Improve Laboratory Diagnostic Results

Data suggests a significant correlation between high rectal temperature and a positive diagnosis (i.e., PCR positive results). For example, in the last six months, data shows that horses with a temperature greater than 103.6° F were more likely to have a positive diagnosis than horses with temperatures ranging from 101.5° F to 103.5° F. This underscores the following tips:

- 1) Importance of patient selection, recognizing where the patient is in the disease process
- 2) The earlier in the disease process a sample is collected, the greater likelihood of identifying the pathogen
- 3) Sample collection techniques, like the length of time the swab is left in the nasal passage to absorb the sample, may improve outcomes

Emerging Disease Threats?

We continue to monitor disease pathogens outside the primary pathogens reported through the biosurveillance program. This helps us get a better picture of situations where we have a horse with clinical signs of respiratory disease, but receive a negative diagnosis for the primary pathogens. We recognize the possibility that multiple pathogens may interact in a respiratory disease complex and continue to dig deeper into this interaction. Stay tuned for more information in the next issue as we work to identify and better understand additional components of the equine respiratory disease complex, including EHV-2 and EHV-5.

These negative cases also served as impetus for a new investigative trial for equine coronavirus (ECoV), which we invite you to participate in at no cost.

Requesting Fecal Samples

Yes, you read correctly. We recently launched a 5-month (Aug. 1 – Dec. 31, 2016) investigative trial evaluating the frequency of equine coronavirus (ECoV) detection in feces from horses that meet the case selection criteria for inclusion in the Merck Animal Health Biosurveillance Program.

You should have received an email at the end of July with full details. Here are some of the high points:

- All ECoV testing will be offered at no charge, courtesy of the Equine Infectious Disease Research Laboratory, University of California, Davis.
- Simply continue to submit samples as you currently would under the respiratory disease surveillance program, and include one to two fresh fecal balls in a fecal cup or ziplock bag.
- Criteria for inclusion: Unexplained fever ($T \geq 101.5^\circ F$) AND one or more of the following signs: Depression, anorexia, nasal discharge and/or cough. *Please refrain from sampling asymptomatic horses or chronic cases.*
- Results will be reported back to you by phone, fax, or e-mail within 24 hours of receipt of the samples.

Why Equine Coronavirus?

Equine coronavirus (ECoV) is considered an enteric pathogen of foals and has only recently been associated with emerging infections in adult horses in Japan, the United States and Europe. Clinical signs most commonly observed in adult horses infected with ECoV include anorexia, lethargy and fever, and less frequently diarrhea, colic and neurological deficits. To date, respiratory signs have not been associated with ECoV. The morbidity rate during outbreaks has been reported to range from 20% to 83%, while mortality rate due to endotoxemic shock, septicemia or hyperammonemia-associated encephalopathy can reach up to 10%.

For more information on ECoV sampling and submission procedures, please contact Dr. Nicola Pusterla at (530) 752-1039 or a Merck Animal Health Equine Veterinary Technical Services veterinarian.

Quick Tips For Clients

The following tips are provided to help you share information with clients on common infectious respiratory diseases in horses. We'll share tips on each of the major respiratory pathogens in coming newsletters, starting with influenza here.

 [Click to download and share the tips below.](#)

Worried About Equine Influenza?

Equine influenza virus is one of the most common infectious upper respiratory diseases in the horse. It spreads rapidly with clinical signs appearing within 24 to 48 hours following exposure, and can be transmitted more than 200 yards through the air by a coughing horse. Indirect transmission can occur via hands, clothing and common use articles such as brushes, buckets and bits. Watch this [short video](#) to learn more, and watch for these clinical signs in your horse:

- Fever (102.5° to $106.5^\circ F$)
- Frequent dry cough
- Nasal discharge
- Lethargy
- Anorexia
- Possible secondary bacterial pneumonia



About the Newsletter

This bi-annual newsletter is being sent as a value-added service to clinics enrolled in the biosurveillance program. Merck Animal Health is passionate about this program, and is providing this newsletter to customer veterinarians to help them stay up-to-date on the latest trends and historical information the study has yielded to date. Technical veterinary advice, interpretation and case management support will be provided by Merck Equine Veterinary Technical Services (Drs. Barnett, Vaala, Gaughan, Craig, Bain and Chappell) and Nicola Pusterla, D.V.M., Department of Medicine and Epidemiology, UC Davis.

If you have questions about the program, please call our technical services team at (866) 349-3497, or email one of the technical services veterinarians at the addresses listed below.

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Relevant Supporting Research

For more information on the latest respiratory disease published research from Merck Animal Health, click on the links below.

- 1) [“Prevalence factors associated with equine herpesvirus type 1 infection in equids with upper respiratory tract infection and/or acute onset of neurological signs from 2008 to 2014”](#)
Pusterla, N., Mapes, S., Akana, N., Barnett, D.C., Mackenzie, C., Gaughan, E., Craig, B., Chappell, D., Vaala, W. *Vet Rec.* 2015; doi: 10.1136/vr.103424.
- 2) [“Voluntary Surveillance Program for Equine Influenza Virus in the United States from 2010 to 2013”](#)
Pusterla, N., Kass, P.H., Mapes, S., Wademan, C., Akana, N., Barnett, D.C., Mackenzie, C., Vaala, W. *J Vet Intern Med* 2015; 29:417-422.
- 3) [“Surveillance programme for important equine infectious respiratory pathogens in the USA”](#)
Pusterla, N., Kass, P.H., Mapes, S., Johnson, C., Barnett, D.C., Vaala, W., et. al. *Vet Rec.* 2011 July 2;169(1):12. doi: 0.1136/vr.d2157.
- 4) [“Voluntary surveillance program for important equine infectious respiratory pathogens in the United States”](#)
Pusterla, N., Kass, P.H., Mapes, S., Johnson, C., Barnett, D.C., Vaala, W., Gutierrez, C., et. al. AAEP Proceedings 2010.

¹ University of California, Davis School of Veterinary Medicine (Nicola Pusterla) and Merck Animal Health. Infectious Upper Respiratory Disease Surveillance Program. Ongoing research 2008-present.

About the Program

Since March of 2008, Merck Animal Health has been conducting an ongoing, voluntary equine biosurveillance program to study the prevalence and epidemiology of relevant viral and bacterial respiratory pathogens. Nearly 6,000 samples from U.S. equids of all ages, genders and breeds presenting with fever and signs of acute upper respiratory disease and/or acute neurological disease have been collected since the study began. Samples are submitted by participating Merck Animal Health customer clinics and tested via quantitative PCR at the University of California, Davis School of Veterinary Medicine (UC Davis). **To be eligible for testing, horses must have an unexplained fever (T ≥ 101.5°F) AND one or more of the following signs: Depression, anorexia, nasal discharge, cough, and/or acute onset of neurologic disease.** The results are then returned to the Merck Animal Health customer within 24 hours and provide invaluable diagnostic and treatment information.

Four-Fold Purpose:

- 1) To provide a valuable diagnostic tool to participating Merck Animal Health customers to assist in obtaining an accurate and timely diagnosis during an acute respiratory disease outbreak so they can provide optimal treatment, quarantine and vaccination strategies to their clients and patients.
- 2) To provide the horse industry with a better understanding of the prevalence and epidemiology of these respiratory pathogens.
- 3) To identify and monitor the current circulating strains of major equine respiratory pathogens.
- 4) To evaluate the efficacy of current vaccination protocols.



The Science of
Healthier Animals