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Animal and Plant Health Inspection Service

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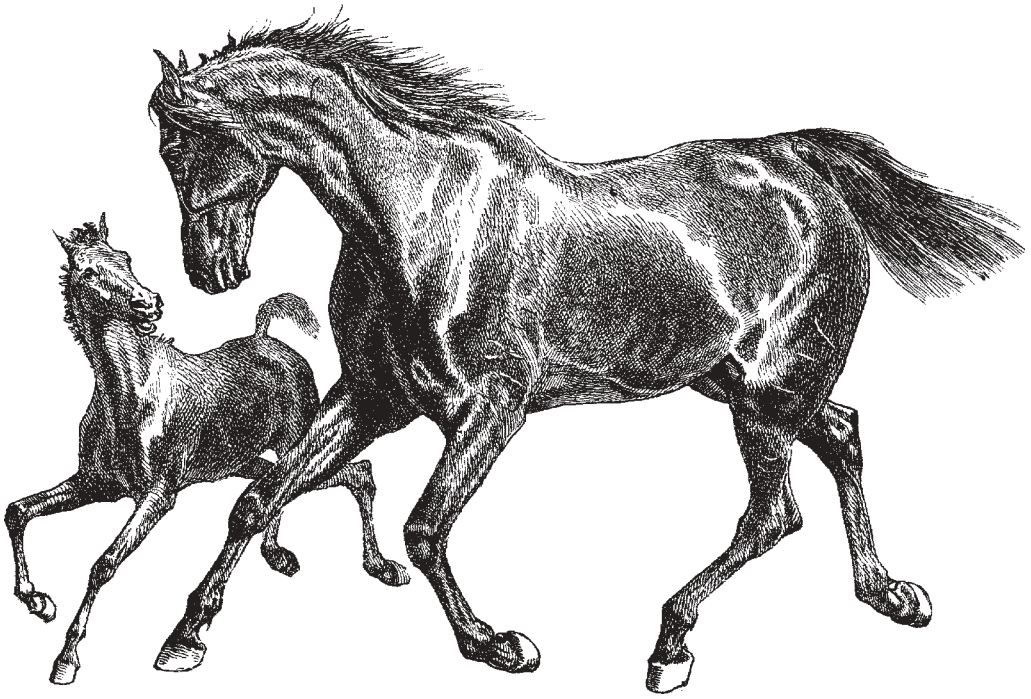
Equine Viral Arteritis

Uniform Methods and Rules, Effective April 19, 2004



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Introduction

Equine viral arteritis (EVA) is a contagious disease of equids caused by the equine arteritis virus (EAV). Although typically not life-threatening to otherwise healthy adult horses, EVA is of special concern because it can result in abortion in pregnant mares, illness and death in young foals, and establishment of the carrier state in stallions. Despite the presence of EAV in many equine populations throughout the world, its prevalence in any particular country can vary widely depending upon breed. Notwithstanding the global distribution of the causal virus, confirmed outbreaks of EVA are reported infrequently.

Ever since the 1984 epidemic on a considerable number of thoroughbred breeding farms in Kentucky, EVA has significantly impacted international trade in horses and equine semen. The import control policies of most countries currently deny entry to carrier stallions and EAV-infective semen because of the associated disease risks. Currently, the United States is the only major horse-breeding country without an import control policy for EVA.

Traditionally, the U.S. horse industry has attached relatively little significance to this disease. Efforts to achieve a greater level of control over dissemination of EAV within the country's equine population have been hampered by insufficient awareness of the disease and its potential economic consequences among many within the Nation's horse industry. This was clearly revealed from the findings of the U.S. Department of Agriculture's (USDA) National Animal Health Monitoring Systems' Equine '98 Study. A high percentage of individuals responding to that survey had little if any knowledge about EVA and even less about the reasons or methods for controlling it.

Another finding of major importance to emerge from that study was the very low seroprevalence of EAV infection in most U.S. horses. Because they have never been exposed to the virus, the vast majority of the Nation's horse population could therefore be considered completely susceptible to natural infection.

Although the international movement of horses has increased over the past 30–40 years, trade in both horses and semen has accelerated considerably during the past decade as a result of changing economic trends in the horse industry worldwide. The absence of any restrictions on the import of carrier stallions or EAV-infective semen into the United States has greatly increased both the likelihood of the virus' becoming more widely disseminated in the Nation's equine population and the risk of economically damaging outbreaks of EVA. This trend has been amply borne out by instances in which imported carrier stallions or infective semen has been responsible for significant outbreaks of EVA, including abortion in mares and mortality in young foals. Such importations not only augment the number of carrier stallions in the breeding population at large but also increase the potential for disease outbreaks through the introduction of more highly virulent strains of EAV previously exotic to the country.

This publication, "Equine Viral Arteritis: Uniform Methods and Rules" (UM&R), contains minimum standards for detecting, controlling, and preventing EVA as well as minimum EVA requirements for the intrastate and interstate movement of equines.

It should be noted that these minimum standards and requirments represent a framework for creating a domestic EVA control program. This document should therefore not be viewed as a final product, but as a work-in-progress that can be modified as science and technology evolve, as more experience in controlling EVA is acquired, and as resources become available to implement the program.

The provisions of these methods and rules were approved by the USDA, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) with recommendations from the United States Animal Health Association, the American Horse Council (AHC), and the American Association of Equine Practitioners (AAEP). These UM&R may be amended in the future.

Part I—Definitions

Accredited veterinarian — A veterinarian approved by the Deputy Administrator of USDA–APHIS–VS in accordance with provisions of part 161, title 9, Code of Federal Regulations (CFR). An accredited veterinarian is preapproved to perform certain functions of Federal and cooperative State–Federal programs.

Approved laboratory — A State, Federal, or private veterinary diagnostic laboratory that must be approved for EVA testing by the USDA–APHIS–VS.

Approved laboratory tests — Laboratory tests for the diagnosis of EAV infection that are approved by the Office International des Epizooties (OIE) and USDA–APHIS–VS.

Area Veterinarian-in-Charge (AVIC) — The veterinary official of USDA–APHIS–VS who is assigned by the Deputy Administrator of VS to supervise and perform the official animal health work of APHIS in the State or States concerned.

Booking — The contracting or scheduling of mares for breeding to stallions by natural service.

Carrier — A clinically normal stallion that sheds EAV continuously in it's semen.

Certificate — An official document issued by a VS representative, State representative, or accredited veterinarian at the point of origin of a shipment of equines. It includes all of the following:

1. The description, including age, breed, color, sex, distinctive markings, or unique and permanent forms of identification, when present (e.g., brands, tattoos, scars, or blemishes), of each restricted equine to be moved;
2. The number of restricted equines covered by the document;
3. The purpose for which the equines are to be moved;
4. The points of origin and destination;
5. The consignor; and
6. The consignee.

Cover — To breed a stallion to a mare by natural service.

Equine — Any animal in the Family Equidae, including horses, asses, mules, ponies, and zebras.

Equine arteritis virus (EAV) — The organism that causes the disease equine viral arteritis.

Equine viral arteritis (EVA) — A contagious disease of equids caused by equine arteritis virus.

Exposed animals

Animals in the Family Equidae that have been exposed to EAV by reason of associating with equines known to be infected with the virus.

Herd

1. All animals of the Family Equidae, such as horses, asses, or zebras, under common ownership or supervision that are grouped on one or more parts of any single premises (lot, farm, or ranch); or

2. All animals of the Family Equidae under common ownership or supervision on two or more premises that are geographically separated but between which equines have been interchanged or had contact with equines from other premises. It will be assumed that contact between animals of the Family Equidae on the different premises has occurred unless the owner can establish otherwise and the results of the epidemiologic investigation are consistent with the lack of contact between premises; or

3. All animals of the Family Equidae on common premises, such as community pastures or grazing association units, but owned by different persons. Other groups of equines owned by the persons involved that are located on other premises are considered to be part of a herd unless epidemiologic investigation establishes that equines from an affected herd have not had the opportunity for direct or indirect contact with equines from that specific premises.

Herd of origin

A farm or other premises where the equines were born or where they have been kept for 30 days or more before the date of shipping. For the purposes of these UM&R, herd of origin has the same meaning as place of origin, premises of origin, and farm of origin.

Identification

Any modality that provides a unique and permanent identification of an individual equine.

Official seal

A serially numbered metal or plastic strip, consisting of a self-locking device on one end and a slot on the other end, that forms a loop when the ends are engaged. An official seal is tamperproof and cannot be reused if opened. It is applied to the doors of a transport vehicle by a representative of the APHIS AVIC or the State animal health official. A serially numbered, self-locking button that cannot be reused may be substituted for the metal or plastic-strip type of seal.

Official test

The virus neutralization and virus isolation test in cell culture are the official laboratory procedures currently employed for the diagnosis of EAV infection. The procedures are described in the OIE Manual of Standards for Diagnostic Tests and Vaccines.

Permit	An official document (VS Form 1–27 or comparable State form) issued by a State or Federal representative or by an accredited veterinarian. The permit must accompany all EAV carrier stallions and those EAV-exposed equines being moved under official seal to a specified destination.
Quarantine	The act of placing exposed or infected animals into isolation from other animals to prevent the transmission of an infection.
Quarantined area	A confined area under the direct supervision and control of a State or Federal animal health official who establishes procedures for the monitoring/recording of all animals entering or leaving the area. All equines under EVA quarantine are considered to have been exposed to EAV.
Reactor	Any horse, ass, mule, pony, or zebra that has been subjected to an officially approved laboratory test that is confirmed positive for antibodies to EAV.
Reference laboratory	The national reference laboratory for the serological testing of EAV infection is the diagnostic virology laboratory in Ames, IA, a part of USDA–APHIS–VS' National Veterinary Services Laboratories (NVSL). As designated by OIE, the international reference laboratory for all laboratory diagnostic tests for EAV infection is the M. H. Gluck Equine Research Center at the University of Kentucky in Lexington, KY.
Seroconversion	The development of neutralizing antibodies to EAV in response to natural infection with EAV or to the administration of EVA vaccine.
Seropositive horse	A horse that has a serum neutralizing antibody titer of 1:4 or greater to EAV using the virus neutralization test.
Seronegative horse	A horse that has a serum neutralizing antibody titer less than 1:4 to EAV using the virus neutralization test.
Shedder	A term used to refer to a carrier stallion that has been determined to have EAV present in its semen and is capable of transmitting the infection to other equines through the act of breeding either by natural service or the use of artificial insemination.
State	Any State of the United States and the Northern Mariana Islands or any other territory or possession of the United States. The District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam are other examples of the latter category.
State animal health official	The chief sanitary health official in each State responsible for disease control and eradication programs affecting livestock and poultry.
Vaccinate	An equine that has been vaccinated with an approved EVA vaccine and for which the vaccination status has been kept current in accordance with the manufacturer's recommendations.

Virus isolation test

Isolation of EAV should be attempted in cultures of the RK–13 cell line (ATCC CCL37). Suspensions of appropriate tissues or fluid specimens from suspect cases of EAV infection are inoculated onto monolayer cultures of RK–13 cells either in 25-cm^2 flasks or multiwell plates in accordance with the procedures prescribed in the OIE Standards Manual for Diagnostic Tests and Vaccines. Inoculated cultures are incubated for 5 to 7 days at 37 ℃ and examined microscopically for viral cytopathic effect. In the absence of visible cytopathic changes, culture supernatants are subcultured onto fresh cell monolayers and incubated for an equivalent period at 37 ℃. The identity of any virus isolates must be confirmed using reference EAV antiserum.

Virus neutralization (VN) test

An assay for determining serum neutralizing antibodies to a particular virus, in this case EAV. Serial twofold dilutions of serum are tested against a standard quantity of an approved reference strain of EAV. The antibody titer is expressed as the highest serum dilution that neutralizes 75 percent of the standard quantity of virus. An antibody titer of 1:4 or greater is considered positive in the EVA VN test.

Part II—Recommended Procedures (Minimum Requirements)

A. Laboratory Testing—Prescribed Methods

Laboratory tests to detect EAV or EAV antibody should be conducted according to the methods for international trade prescribed by the OIE. These methods are published in the chapter on EVA in the current OIE Manual of Standards for Diagnostic Tests and Vaccines. The manual is available at <http://www.oie.int/eng/normes/mmanual/A_summry.htm>.

B. Approved Laboratories

USDA–APHIS–VS maintains a list of laboratories approved to conduct serological testing for EAV. The proficiency of approved laboratories is subjected to periodic evaluation by NVSL. The current list of approved laboratories can be viewed at <http://www.aphis.usda.gov/vs/nvsl/labcertification.htm>.

C. Serology

1. Collecting samples—Serum samples are examined for the presence of antibodies to EAV in a VN test. Clean, nonhemolyzed, separated serum is required. Blood samples should be collected into a Vacutainer® tube without anticoagulant. Following clot formation, the blood collection tube should be centrifuged and the serum transferred to a new sterile tube. Serum must be shipped to the testing laboratory on ice packs.

2. Supporting documentation needed—The purpose for testing (e.g., diagnostic, surveillance, prevaccination) and a clinical history, including EVA vaccination status and vaccination dates, must be provided to the testing laboratory. A single serum sample is sufficient to screen for the presence of EAV antibodies in a healthy horse. A VN titer of 1:4 or greater is considered positive for EAV serum antibodies. When samples are submitted for diagnostic purposes, paired sera are required. The first sample is collected as early in the clinical course of the infection as possible, and the second sample is collected 14–21 days after the first. The two samples are examined together in the same VN test. Demonstration of seroconversion or a fourfold or greater rise in antibody titer between the first and second sample is significant and confirmatory of recent infection.

3. Repeating blood collection—Occasionally, sera will be encountered that cause nonspecific toxic changes to the cell monolayers. These changes can interfere with interpretation of VN results at the lower serum dilutions. In cases where the problem cannot be overcome by the laboratory, it may be necessary to repeat blood collection from the horse in question and submit the new serum sample to the testing laboratory. The test setup schedule of the laboratory determines the turn around time for receiving VN test results, which is normally 5–7 days.

D. Virus Isolation

1. OIE reference laboratory—Isolation of EAV in cell culture is a specialized procedure. Attempts to perform this test should be limited to veterinary diagnostic laboratories with experience and expertise in working with EAV. The OIE reference laboratory for EVA in North America is under the direction of Dr. Peter J. Timoney. It is located at the Department of Veterinary Science, 108 Gluck Equine Research Center, Lexington, KY 40546–0099. [Telephone: (859) 257–4757, ext. 81085; Fax: (859) 257–8542; E-mail: ptimoney@uky.edu).] Laboratories wishing to provide virus isolation for EAV are urged to contact Dr. Timoney or Dr. William McCollum to obtain a panel of semen samples for evaluation and to confirm their competency in the isolation of EAV.

2. Maximizing accuracy—To maximize the accuracy of attempted virus isolation, care must be taken in sample selection and handling during shipment to the laboratory. Submitters should contact the receiving veterinary diagnostic laboratory to coordinate sample selection, handling and processing, and expedient shipment of samples collected for EAV isolation attempts. For example, use of heparin is contraindicated when collecting whole blood samples as is the use of disinfectants in cleansing the external genitalia of stallions before collecting a semen sample. In conjunction with attempted virus isolation, the EAV serostatus of each horse being tested for virus should be determined (see the section entitled "Serology" above).

3. Virus isolation samples—In the case of suspected outbreaks of EVA, samples for virus isolation include nasopharyngeal and conjunctival swabs immersed in virus transport media, unclotted blood using EDTA or sodium citrate as an anticoagulant, and semen from stallions considered to be possible carriers of the virus. When EVA is suspected as a cause of mortality, a variety of tissues collected at necropsy should be examined. It is advisable to consult OIE in determining what tissues should be sampled. In instances of suspected EVA abortion, fetal and placental fluids and tissues should be submitted.

4. Semen samples—To determine the virus-shedding status of seropositive stallions, the sperm-rich fraction of semen must be submitted. Semen from at least two ejaculates should be submitted for evaluation. The preferred sample size is 5–10 mL of unextended raw semen. Less preferable is 5–10 mL of extended fresh cooled semen. When frozen semen is the only sample available, at least two straws per ejaculate should be submitted to the laboratory. Virus isolation attempts may require more than one cell-culture passage. The normal turnaround time for EAV isolation testing is 10–14 days.

E. Testing Procedures

1. Test before breeding—Before being used for breeding, stallions should have a blood sample collected and tested for antibodies to EAV. Stallions that are seronegative should be vaccinated with an approved EVA vaccine. EVA-vaccinated stallions should not be exposed to EAV-infected animals and should not be used for breeding within 28 days after their initial vaccination. Stallions should be annually revaccinated against EVA.

2. Seropositive stallions—It is recommended that the following procedures be followed when stallions test positive for antibodies to EAV.

   a. If the stallion's owner can document that the animal was seronegative for antibodies to EAV before being vaccinated for EVA, the procedures listed under E.1 should be followed. A valid EVA vaccination certificate is needed to document the stallion's negative prevaccination antibody status.

   b. If the stallion's owner cannot document that an antibody titer to EAV was the result of vaccination, one of the two procedures listed below should be followed.

(1) Breed the stallion to two mares that are negative for EAV antibodies. Test mares must be tested approximately 28 days after breeding for the presence of antibodies to EAV. A negative test result on the two test mares will qualify the stallion for breeding. The stallion will be classified as a seropositive nonshedding stallion.

Or:

(2) Collect semen from the stallion and submit it to a laboratory approved for the isolation of EAV. A negative virus isolation result qualifies the stallion for breeding. The stallion will be classified as a seropositive nonshedding stallion. This stallion will be eligible for EVA vaccination and should be annually vaccinated against the disease.

c. The farm's veterinarian must document all vaccinations and submit an EVA vaccination certificate to the State Veterinarian within 7 days of the vaccination date.

(1) Before a stallion receives its first EVA vaccination, a blood sample must be collected, either very shortly prior to or at the time of vaccination.

(2) A stallion's prior EVA test history will establish how the EVA UM&R will be applied in determining the stallion's breeding status.

d. When a shedding stallion is approved for breeding by the State Veterinarian, the procedures listed next should be followed.

(1) The owner or agent of a mare booked to a carrier stallion, or seeking such a booking, must be notified in writing by the stallion's owner or agent that the animal is classified as a carrier of EAV. A written copy of the booking confirmation must be sent to the State Veterinarian.

(2) The carrier stallion must be housed, handled, and bred in a facility isolated from noncarrier stallions.

(3) A carrier stallion can be bred to a mare that was vaccinated against EVA at least 21 days before breeding or that has an antibody titer to EAV from previous natural exposure to the virus.

(4) A carrier stallion can be bred to a seronegative mare that can be kept in total isolation from other seronegative equines for 3 to 4 weeks after breeding.

(5) A mare with clinical signs of EVA should not be bred until it has been documented that she is seropositive for antibodies to EAV.

F. Outbreak Procedures

1. Notification of State Veterinarian—When an EVA outbreak is suspected, the farm or attending veterinarian should immediately contact the State Veterinarian. In jurisdictions where EVA is not a reportable disease, a self-imposed quarantine should be implemented immediately on the affected premises to restrict further spread of the infection.

2. Farm outbreaks—For a quarantine to be maximally effective, immediate restrictions must be imposed on the movement of all horses associated with the premises. Take these actions as soon as you suspect an outbreak:

   a. Promptly isolate all affected horses.

   b. Notify the farm or attending veterinarian immediately.

   c. In consultation with the farm or attending veterinarian, seek laboratory confirmation of a diagnosis as soon as possible.

   d. In the case of abortion or death in a newborn foal, place the placenta, fetus, or foal in a leakproof bag, keep cold (not frozen), and dispatch to the nearest qualified diagnostic laboratory.

   e. Disinfect the stall, any equipment, or other potentially contaminated facilities using a phenolic disinfectant. After treatment with disinfectant, dispose of any bedding by composting in an area away from other horses.

   f. Using the antiseptic recommended by the farm or attending veterinarian, wash down the hindquarters and tail of any mare that has aborted and isolate her from other horses for 4 weeks.

   g. Restrict movement of horses onto and off the affected premises.

   h. Suspend breeding and training operations until the outbreak is over and notify owners of mares on the affected premises. Mares affected with EVA can be safely bred later in the same breeding season once they have fully recovered from the disease and once the outbreak has run its course.

   i. Monitor horses at weekly intervals to check for any additional spread of the virus. If no further clinical cases of EVA or serologically confirmed cases of infection have occurred for 3 consecutive weeks, the outbreak can be considered over, and all movement restrictions can be lifted.

   j. Vaccinate all at-risk horses.

3. Racetrack outbreaks—Measures to be taken in the event of an EVA outbreak at a racetrack, equestrian event, or horse show are broadly similar to those recommended for dealing with an outbreak on a breeding farm. Major emphasis should be placed on isolating animals, restricting movement in and out of the

facility, and vaccinating all at-risk animals at the earliest opportunity. However, EVA outbreaks at racetracks may involve conflicting interests. Measures to restrict the spread of infection at such venues often interfere with racing and frequently do not find favor with track management, trainers, and owners. In addition to the steps outlined for farm outbreaks, implement these specific measures as soon as an EVA outbreak is suspected at a racetrack:

a. Isolate all affected horses.

b. Prohibit the movement of horses between barns that have housed affected horses.

c. Restrict the movement of horses stabled in such barns other than for racing or training.

d. Establish temporary, sanitized stabling facilities for ship-ins.

e. Require that a health certificate accompany all horses coming to the track.

f. Require a 48-hour departure slip from the State Veterinarian and require the certifying veterinarian to contact the jurisdiction of the horse's destination for approval to return home.

G. Control Procedures

1. Vaccine—It has been possible to develop effective programs for the prevention and control of EVA based on the known characteristics of the causal agent and epidemiology of the disease. This infection can be controlled by minimizing or eliminating direct or indirect contact with various secretions, excretions, or tissues of infected horses. An important adjunct to the success of existing EVA control programs is the availability of a safe and effective vaccine against the disease (ARVAC®, Ft. Dodge Animal Health).

2. Nonbreeding farm settings—The goal of current control programs is to restrict the dissemination of EAV in breeding horse populations in order to prevent outbreaks of EVA-related abortion or illness and death in young foals and establishment of the carrier state in stallions and postpubertal colts. Even though EAV has sometimes been known to cause widespread outbreaks of disease at venues such as race tracks, horse shows, sales, and equestrian events, currently there are no control programs specifically directed at preventing the spread of the virus in nonbreeding farm settings.

3. Specific measures—Critical to the effectiveness of EVA prevention and control programs is the observance of sound management practices that can help minimize the risk of spreading this and various other equine infectious diseases. All control programs developed so far highlight the uniquely important role of the carrier stallion in the epidemiology of EVA. Such animals are the primary reservoir of the virus and serve as long-term sources of infection, transmitting EAV to susceptible mares either through natural cover or by artificial insemination. The following specific preventive measures can help minimize the spread of EAV in breeding horse populations:

   a. Isolate all new arrivals and horses returning from other farms, sales, or race tracks for 3 to 4 weeks.

   b. If at all possible, segregate pregnant mares from other horses and maintain mares in small groups based on anticipated foaling dates until they have foaled.

   c. Before each breeding season, blood-test all new breeding stallions for the presence of antibodies to EAV.

   d. Have the semen of any antibody-positive, nonvaccinated stallion laboratory-tested to identify any carrier animals.

   e. Annually vaccinate all noncarrier breeding stallions at least 4 weeks before the start of each breeding season.

   f. Physically isolate any EAV-carrier stallions.

   g. Observe strict hygienic precautions when breeding or collecting semen from carrier stallions to avoid the risk of inadvertent transfer of infection through indirect contact with virus-contaminated objects.

   h. Restrict breeding EAV-carrier stallions to vaccinated mares or mares that have previously tested positive for naturally acquired antibodies to the virus.

   i. Vaccinate EAV antibody-negative mares against EVA at least 3 weeks before breeding to a known carrier stallion or with virus-infective semen.

   j. For 3 weeks after they have been bred to a carrier stallion, isolate mares vaccinated for the first time against EVA from all but known EAV antibody-positive horses. It is especially important to avoid contact between such mares and other pregnant mares to which the virus can be spread by the respiratory route.

   k. In breeds or areas in which there is a high prevalence of EAV infection, vaccinate all immature male foals between 6 and 12 months of age against EVA as advised by your veterinarian. If implemented over a period of years, such a program of targeted vaccination would greatly reduce the number of carrier stallions and largely eliminate the primary reservoir of EAV.

l. Determine the infectivity status of semen used for artificial insemination, especially if imported from abroad. When breeding mares with EAV-infective semen, adopt the same precautions as recommended for mares bred by natural cover to a carrier stallion.

4. Voluntary protocol available—A voluntary, industry-driven protocol to assist breeders in preventing the spread of EVA was developed by a working group convened by the AHC in 1996. The guidelines, released in August 1997, were widely endorsed and are available at the Council's Web site: <http://www.horsecouncil.org>. Click on the Equine Health Advisory box.

5. Vaccination debate—Because outbreaks of EVA are sporadic and infrequent in settings such as racetracks, horse shows, sales, and veterinary clinics, it is debatable whether a more widespread policy of vaccination against EVA would be justified. Implementation of such a program of prophylactic vaccination would have repercussions on international trade with certain countries that currently debar the import of horses seropositive for antibodies to EAV.

H. Movement of Stallions and Semen

1. Official health certificate—Equines entering a State from another State or from another country should be accompanied by an official health certificate stating that they are free from clinical signs of an infectious disease (which by inference includes EVA).

2. Seropositive stallions or EAV-infective semen—Breeding stallions and equine semen entering a State from another State or another country should be tested for EAV within 90 days of entry. This means that stallions must be tested serologically, and seropostive stallions must have their semen tested by virus isolation. Carrier stallions (those in which EAV has been isolated from their semen) and EAV-infective semen must be certified. These results appear as a certifying statement—written on the health certificate—that the consignee has been advised and consents to the shipment. Vaccinated mares can be bred to infected stallions or inseminated with semen from an infected stallion.

3. Permit—All carrier stallions and EAV-infective semen entering a State should be moved only on a permit issued by the State Veterinarian. All parties associated with the movement of carrier stallions and EAV-infective semen into or within the State should be made aware that these animals may be subject to quarantine at any time.

I. Recommendations for Breed Registries

4. Regulations—States should develop regulations allowing for the interstate movement of carrier stallions and EAV-infected semen.

1. EVA education: publication of articles—Breed registries should take a leadership role in educating their members about EAV. Breed registries should publish articles that

   a. Explain what EVA is, how it is spread, and why it is important to breeders;

   b. Advise mare owners how to prevent abortion and neonatal disease;

c. Explain that breeding a shedding stallion is entirely manageable and how to breed such a stallion safely;

d. Explain why an effective EVA control program benefits the breed registry's members;

e. Educate mare owners to ask stallion owners about the EVA status of their stallions;

f. Educate prospective stallion buyers to ask for EVA testing at the time of purchase; and

g. Explain how to prevent the carrier state in stallions.

2. EVA education: additional avenues—Breed registries should also publicize and distribute other available educational material such as EVA breeding guidelines (AAEP or AHC) and the USDA video and CD on EVA; distribute information on testing, laboratories, and testing protocols; and invite speakers to annual meetings and breeders' group meetings to explain the disease and answer questions.

3. Safe breeding practices—Breed registries should promote safe breeding practices by encouraging

   a. Testing of breeding stock to determine immune status;

   b. Vaccinating to control and eliminate EVA;

   c. Vaccinating seronegative stallions, mares, and immature colts; and

   d. Properly using and managing carrier stallions.

4. Raising awareness—Breed registries should raise awareness and foster discussion about EVA by

   a. Encouraging open dialog between stallion and mare owners;

   b. Encouraging buyers of imported stallions to test before or at the time of import to identify carrier stallions;

   c. Encouraging buyers of domestic stallions to test them as part of the prepurchase examination;

   d. Encouraging mare owners to ask stallion owners about the stallion's EVA status before breeding; and

e. Reducing the stigma attached to EVA by emphasizing that the disease is manageable, that it can be prevented through a vaccination program, and that carrier stallions can be used safely.

5. Testing—Breed registries should require mandatory testing of all breeding stallions as a condition of registration. Although voluntary adherence to breeding guidelines is helpful and desirable, it will not solve all of the problems. A registry can prevent many problems by using its influence and control over the registration process to require testing as a condition of registration. This eliminates any singling out of carrier stallions and tends to discourage deception. In particular, breed registries should take these actions:

   a. Publish the EVA status of all active breeding stallions. On the basis of test results, status categories would include (1) serologically negative, (2) serologically positive but negative for virus in the semen (nonshedder), (3) serologically positive and positive for virus in the semen (carrier), and (4) serologically negative and subsequently vaccinated annually.

   b. Require annual testing of all nonvaccinated stallions.

   c. Recommend vaccination for all nonshedding stallions (after proof of negative test).

   d. In the case of vaccinated stallions, require proof of annual vaccination booster for all active breeding stallions.

   e. Keep a list of which stallions recognized by the registry are EAV-carrier stallions.

   f. Notify mare owners of carrier stallions through publications or in response to direct inquiry.

6. Developing regulations—Breed registries should work with local horse groups and government authorities to develop State, national, and import regulations.