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### Equine Venereal Disease

STDs. They're the kind of thing many people would rather not discuss. Disease transmission through sexual contact or bodily fluids such as semen and blood is still a taboo subject, even in 2012. But the reality is that as long as horse owners continue to breed their mares to stallions hundreds or thousands of miles away--or to stallions who are in their hemisphere for just a breeding season--venereal diseases have the potential to become more widespread.

These diseases can be transmitted directly between mares and stallions during natural cover and indirectly via artificial insemination (AI) or breeding equipment. Sometimes AI reduces disease spread; other times it can fuel it. Most venereal diseases aren't life-threatening to an adult horse, but some can cause abortions in broodmares or death in young foals. Others make it difficult for mares to conceive. So from an economic as well as a welfare point of view, it's time to cast aside any discomfort about this taboo topic and take a closer look at equine venereal diseases.

### Bacterial Diseases, Including Contagious Equine Metritis

The most common venereal diseases--which are "fortunately relatively rare," says Gary M. Greene, DVM, Dipl. ACT, senior veterinarian at Greene, Lewis, & Associates equine veterinary clinic, in Covington, La.--are those caused by bacteria. What Greene sees above all in his practice is a spread of *Pseudomonas* and *Klebsiella* bacteria. These bacteria can cause endometritis (inflammation of the innermost lining of the uterus), reduced conception rates, and early abortion, as well as placentitis (inflammation of the placenta) in pregnant mares, he says. Prebreeding cultures of both mares and stallions help veterinarians detect a disease and, thus, prevent transmission. And contrary to popular belief, rigorous cleaning of reproductive organs could have the opposite effect of what's intended. "Frequent washing with harsh antibacterial agents may predispose the stallion to these infections by replacing the normal bacterial flora with these opportunistic bacteria," says Greene.

Contagious equine metritis (CEM) is another highly contagious venereal bacterial disease, says Dickson Varner, PhD, DVM, professor of equine reproduction at Texas A&M University, in College Station. It primarily impacts mares' fertility and comfort.

The causal agent (*Taylorella equigenitalis*) can cause infection and inflammation in a mare's reproductive tract, including her uterus, vagina, cervix, clitoris, and vulva, Varner says. Clinical signs frequently include thick vaginal discharge and discomfort. In some cases infection isn't obvious; the only sign you might see is that the mare returns to heat faster than usual.

Stallions don't develop clinical signs because they aren't truly "infected," but rather carry the bacteria on their external genitals and, rarely, within the accessory sex glands, notes Peter J. Timoney, FRCVS, PhD, professor and former department chair and director of the University of Kentucky's Gluck Equine Research Center.

The bacterium is tricky to detect and sometimes slips past screening tests, causing new outbreaks in once-disease-free regions, says Andrew Preston, PhD, microbial pathogeneticist at the University of Bath, England. Fortunately, treatment is easy and effective, as the bacteria succumb to a wide variety of antibiotics, including those in semen extenders (products that breeders add to cooled semen before shipping). But owners and veterinarians must be careful about promoting antibiotic-resistant bacteria. "There are some widely available commercial extenders that have, in my view, insufficient amounts of antibiotics to control the bacteria," says Varner.

It's important to detect and treat all CEM cases, even asymptomatic horses or those that have recovered without treatment, Varner adds. Untreated horses will get better on their own, but they can become carriers. Work with a veterinarian to treat horses both topically and systemically with antibiotics, Varner says, and wash genital areas gently with clean water and a nonantiseptic soap for five to seven days, followed by treatment with 2% chlorhexidine scrub.

CEM prevention is mainly based on prebreeding screening of stallions and mares, says Preston. Specific screening requirements vary from one country to another, but essentially all breeding horses should be swabbed for CEM prior to the start of every breeding season. CEM is a reportable disease in many countries--including the United States and the U.K.--which means veterinarians must report positive cultures to the authorities. Affected horses are then not allowed to breed until they have been treated and shown to be disease-free.

Unfortunately, screening is not 100% effective for eliminating cases, Preston says, as veterinarians have detected positives in supposedly CEM-free regions. And, says Varner, semen analysis won't reveal the presence of CEM-causing bacteria (it's dependent on correct swabbing techniques). So if you're breeding your horse with one that's been considered "CEM-free," it's still a good idea to be on the lookout for signs of the disease in a mare after breeding.

### Equine Viral Arteritis

Equine viral arteritis (EVA) is a serious contagious viral disease that can have significant economic consequences in a breeding population, says Timoney. The virus can cause mares to abort and result in life-threatening illness in young foals. It spreads quickly not only by the venereal route but also through the air, making it difficult to control. Recent outbreaks in France resulted in considerable economic losses for the country's breeding industry, not only from foal deaths and abortions but also from trade impairment due to stricter quarantines.

Infected horses show clinical signs similar to horses suffering from any other respiratory disease. They might also have fever, hives, conjunctivitis, or swelling in the legs, prepuce, scrotum, or mammary glands, and they might exhibit weight loss, Timoney says. However, first infections typically cause few, if any, clinical signs. Adult horses usually make full clinical recoveries with or without supportive treatment such as non-steroidal anti-inflammatory (NSAIDs) and antibiotics. But foals can develop life-threatening pneumonia and/or intestinal infection as a result of EVA.

Unfortunately, stallions that have come into contact with the virus can become long-term carriers, perhaps for the remainder of their lives, says Timoney. The percentage of carriers in a breed or region's population can range from less than 10% to as high as 70%. Since EVA persistence is testosterone-dependent, a carrier stallion will continue to "shed" virus in his semen as long as he remains intact.

Being a carrier won't stop a stallion from being used as a stud, though, Varner says. Many breeders continue breeding their mares to EVA-carrier stallions, but they prepare their mares in advance by vaccinating them against the disease.

"The commercial modified-live vaccine available in the U.S. protects vaccinated mares against EVA and the risk of abortion they might otherwise experience through breeding to an EVA virus-positive stallion," Varner says. He suggests vaccinating colts in their first year (between 6 and 12 months) to prevent them from becoming carriers at a later time.

Currently, EVA is not a nationally reportable disease in the United States. It is reportable in certain states, however, so check with your local authorities to see if you live in one of these areas.

### Dourine

Dourine, a grave venereal disease, is still relatively uncommon, particularly in the Northern Hemisphere, according to Varner. Even so, the most recent outbreak was reported in Italy in 2011. In the United States and most European countries, dourine is a reportable disease.

Caused by a protozoan organism--a microscopic, single-celled parasite--dourine can cause fever, weight loss, skin plaques that lose their pigment, thick discharge from the mare's vagina or the stallion's urethra, genital swelling, and, later, neurologic problems such as ataxia (incoordination) and paralysis. The majority of symptomatic horses slowly die from the disease, so veterinarians generally consider euthanasia to be the most humane solution, Varner says.

Euthanasia is also how many countries try to eradicate the disease, as it is difficult to treat and even to diagnose, according to the *Merck Veterinary Manual* (9th edition). Current diagnostic tests are not very specific for detecting the kind of protozoan that causes dourine, so veterinarians don't consider them very reliable.

### Global Perspectives on VD

Not all countries view all equine venereal diseases with the same level of concern. While some have stringent testing requirements and policies, according to Tom Stout, PhD, professor of equine medicine and reproduction at Utrecht University, in the Netherlands, others are more "relaxed" in their attitudes, particularly about CEM. "That's primarily because we don't see much in the way of clinical disease (visible signs)," Stout says. "CEM is considered largely a commercial problem in that horses and/or semen need to be negative for export."

All domestic stallions in the Netherlands, for instance, must test negative before their semen can be shipped, but mares are not tested. "The major area of potential risk should therefore be amongst the natural breeding populations, because stallions could pick up CEM from a mare during the breeding season." Even so, Stout says he suspects that very few mares are positive for the disease.

In some parts of Europe EVA is "endemic," says Stout. "But, again, we rarely see clinical disease." And only about half of Dutch stallions are vaccinated--probably just the ones whose semen is likely to be exported, he adds.

### Herpesvirus

Like humans, horses can acquire a sexually transmissible form of herpesvirus. Equine herpesvirus-3 (EHV-3) is not to be confused with equine herpesvirus-1 (EHV-1), which can spread through the air and cause a range of clinical signs in horses, says Timoney. EHV-3 specifically targets the male and female external genitals--primarily the penis, the vulva, and the perineum. Painful papules develop on the skin in these areas about 10 to 14 days after viral exposure and then erupt into oozing vesicles that eventually scab over.

Although the papules have little effect on breeding (aside from horses avoiding the painful contact), owners should keep in mind equine welfare with regard to EHV-3. "As a veterinarian I would recommend that they not breed them during an active infection and allow adequate time for the lesions to heal completely," Varner says.

### Equine AIDS?

There is no true equivalent to human acquired immune deficiency syndrome (AIDS) in horses, says Varner, but blood-based equine diseases could potentially be transmitted via the venereal route. "Anytime you have something like blood in the ejaculate, any infective agent in that blood could be transmissible," he explains. Fortunately, the likelihood of this happening is very remote. Diseases like equine infectious anemia (EIA) and piroplasmiasis might be transmitted via blood exchange during the breeding process (whether by artificial insemination or live cover). But as these diseases go beyond the scope of this article, we invite you to read more about them in detail on TheHorse.com.

### Cutting-Edge Research

Just as with many other equine health conditions with far-reaching impact, researchers are intent on finding better ways to diagnose, treat, and prevent equine venereal diseases. Much of this research involves improved detection methods as laboratory analyses become more detailed and complex. Other research focuses on evaluating the disease-causing agents genetically to better understand their mechanisms of action and how they interact with the horse's body.

Dourine researchers are busy analyzing recent Italian outbreaks and building detailed maps of where the disease has been reported. Out of a surprising number of asymptomatic horses that tested positive, only a few were confirmed as "dourine cases," according to Massimo Scacchia, PhD, a researcher at the Istituto G. Caporale in Teramo. Specific Italian laws require at least two reliable indicators (that can be monitored clinically or in the laboratory) of the disease for it to be a true dourine case, he says. Scientists are monitoring the disease's progression in that country with an ongoing surveillance program and developing new tests for a more reliable diagnosis. The Teramo team was able to determine that horses imported for human consumption without proper identification were most likely responsible for introducing and spreading the disease, Scacchia says. Fortunately, veterinarians have confirmed no new cases since late 2011.

Equine viral arteritis researchers are studying safer and improved vaccines--testing the pros and cons of modified-live virus versus inactivated virus vaccines. Eliminating EVA from semen is another ongoing challenge for researchers; their goal is to circumvent the need to castrate infected breeding stallions. Scientists have attempted immunocastration (chemically stopping stallions' reproductive abilities in a reversible process) in French stallions, but it seems the horses begin shedding again once castration is reversed. Very precise semen centrifugation (spinning) has enabled researchers to remove much of the viral load from semen, but Timoney says a variable amount remains.

And Preston has been hot on the genomic trail of CEM's causative agent. "The bacterium is evolving all the time, and there are potentially an infinite number of strains of CEM," he says. By focusing on the similarities of these strains along their genomes, however, he's moving closer to developing one vaccine that will be effective against all strains. Unfortunately, though, limited funding for CEM research might prevent a vaccine from appearing for quite some time, he says.

### Take-Home Message

Promote your horse's welfare and your farm's financial well-being by safeguarding your breeding stock from venereal disease.