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# Contagious Equine Metritis

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Contagious equine metritis (CEM) is a venereal disease of horses caused by the bacteria *Taylorella equigenitalis*. It can impact fertility in both mares and stallions. The United States is considered to be CEM-free. Therefore, CEM is a foreign animal disease that is reportable at both the Federal and State level. The U.S. horse industry could suffer significant economic losses if the disease became established here.

CEM is spread during breeding or through contact with contaminated objects. It is highly contagious among horses and can be difficult to detect and control. Signs of illness in infected mares may not be obvious, and stallions carry the bacteria without showing any signs at all. In some cases, mares may also become carriers. Foals born to infected/carrier mares can also become long-term carriers of the bacteria.

## What To Look For

Stallions show no signs of infection and become disease carriers. Mares typically clear infection without treatment but can also become carriers.

In mares, symptoms usually appear 10–14 days after infection and include:

- Vaginal discharge (in up to 40 percent of affected mares)
- Infertility
- Abortion

## How To Prevent This Disease

CEM can be transmitted by an infected horse during breeding; through artificial insemination with contaminated semen; or by contact with contaminated objects, such as hands or instruments. It can also be spread during the semen collection process. There is no vaccine.

### Import Restrictions for Horses

To keep this disease out of the United States, USDA requires stallions and mares imported from [CEM-affected countries](#) to quarantine and test negative for CEM before they can enter the country. Learn more about [U.S. import restrictions for horses](#).

### Biosecurity Precautions During Breeding

As a horse owner or breeder, here's what you can do to prevent the spread of CEM:

- Test stallions annually for *T. equigenitalis* before each breeding season.

- Maintain accurate and up-to-date breeding records, including breeding date and stallion used, to quickly identify infection source and limit disease spread.
- If your mares are having reproductive problems or have symptoms of contagious equine metritis, contact your veterinarian.
- Always clean and disinfect semen collection equipment between stallions.

## How It Is Treated

Animal health officials investigate each detection to identify, test, and treat all infected or exposed horses. Affected horses are quarantined and treated with antimicrobials to eliminate *T. equigenitalis*. They are retested and not cleared for release from quarantine until results are negative. After treatment, fertility appears to return to normal in recovered horses.

Treatment is performed in quarantine under the supervision of regulatory animal health officials. Personnel thoroughly wash the external genitalia in stallions and mares using a disinfectant soap (for example, 2% Chlorhexidine). After thoroughly rinsing the area, they apply a topical antibiotic (for example, nitrofurazone or silver sulfadiazine). Steps need to be repeated for 5 consecutive days. Most horses respond very well to one 5-day treatment; however, some may need to be retreated.

## Report Signs of Animal Disease

Producers or owners who suspect an animal disease should contact their veterinarian to evaluate the animal or herd. [Find an accredited veterinarian](#).

Animal health professionals (veterinarians; diagnostic laboratories; public health, zoo, or wildlife personnel; and others) report diagnosed or suspected cases of [nationally listed reportable animal diseases](#) to [APHIS District Offices](#) and to the [State animal health official](#) as applicable under State reporting regulations.

## Controlling Contagious Equine Metritis

Confirmed CEM Cases in the United States

CEM has been detected sporadically in the United States, most recently in 2013. USDA oversees quarantine, testing, and treatment programs for CEM. We have eradicated the disease from the U.S. equine population after each detection.

### **May 2013**

In May 2013, USDA's National Veterinary Services Laboratories (NVSL) confirmed that a Thoroughbred mare in Puerto Rico was positive for *Tayorella equigenitalis*, the bacterium that causes CEM. NVSL determined that the *T. equigenitalis* isolate from this mare matched a strain detected previously in Europe and the United States, most recently in an Arabian stallion in Arizona in 2011.

The positive mare was born in the continental United States in 2011. She was moved to Puerto Rico just before she was confirmed to have CEM based on three positive complement fixation tests and a positive culture at NVSL. She subsequently completed a course of antibiotic treatments for *T. equigenitalis* and was re-tested with negative results.

A thorough epidemiologic and diagnostic investigation of this case was conducted. Potentially exposed horses were investigated and tested in Puerto Rico and three States. No additional positive horses were detected and no relationship was found between the positive mare and any horses associated with previous U.S. cases of CEM.

### **February 2013**

In February 2013, NVSL confirmed that a Lusitano mare in south-central California was positive for *T. equigenitalis*, the bacterium that causes CEM. NVSL determined that the strain of the bacterium did not match any *T. equigenitalis* strains ever found in the United States, indicating this case was not related to any previous U.S. cases of CEM.

In addition to the positive Lusitano mare, two exposed stallions and one exposed mare were subsequently found positive for *T. equigenitalis*. All four positive horses were treated, re-tested with negative results, treated again, and released from quarantine. Additionally, a filly foal born to one of the positive mares in 2013 was tested with negative results, treated, and released from quarantine along with her dam.

A thorough epidemiologic and diagnostic investigation was completed. The positive Lusitano mare was imported as a foal from a country not known to be affected by CEM. She was bred to a Lusitano stallion in California. That stallion was imported as an adult from the same country as the positive mare, and he was one of the two exposed stallions found positive with a strain of *T. equigenitalis* that matched the strain from the positive mare. The second positive stallion was a domestic Lipizzan that had semen collected at the same facility as the positive Lusitano stallion in 2012. The second positive mare was a domestic cross-bred Andalusian. She had been bred by artificial insemination to the positive Lusitano and became pregnant. The imported Lusitano stallion was determined to be the source of infection for the other three horses. Culture of frozen semen indicates the stallion had been infected since at least 2009 and likely was carrying the infection at importation.

Along with the positive horses, a total of 18 exposed horses were identified and quarantined, including the foal of the positive mare. Eleven exposed stallions in California, including a gelding exposed as a stallion, and one exposed stallion in another State, were tested with negative results, treated, and released from quarantine. There were also five exposed mares in quarantine for testing and treatment in California and two other States. Each exposed horse identified in the investigation completed a testing and treatment protocol to determine its CEM status.

## **July 2011**

In July 2011, NVSL confirmed that an Arabian stallion on a central Arizona premises was positive for *T. equigenitalis*, the bacterium that causes CEM. NVSL also determined that the strain of the bacterium did not match any *T. equigenitalis* strains previously found in the United States, indicating this case was not related to the California CEM case in May 2010, the multi-State CEM outbreak in late 2008, or imported stallions found positive in 2006.

The positive stallion was born in Arizona in 2007. He was tested for CEM to meet requirements for international shipment of his semen. After testing positive, the stallion received antibiotic treatment for *T. equigenitalis* and was re-tested with negative results.

A thorough epidemiologic and diagnostic investigation of the case was conducted. Information from the investigation indicates that 17 other stallions in 2 States, and

13 mares in 6 States, were exposed to the positive stallion. Although one exposed mare died of unrelated causes before completing testing, all other exposed stallions and mares completed a testing protocol to determine their CEM status. All 29 of those exposed horses (17 stallions, 12 mares) were found negative for *T. equigenitalis*.

## **May 2010**

In May 2010, NVSL confirmed that an Arabian stallion on a southern California premises was positive for *T. equigenitalis*, the bacterium that causes CEM. A thorough epidemiologic and diagnostic investigation was carried out to determine the origin of the CEM bacterium. Final analysis of the epidemiologic and diagnostic findings from the investigation indicated that the positive Arabian stallion was contaminated with *T. equigenitalis* prior to his arrival in the United States and that no further spread of the bacterium occurred after he arrived. The positive imported stallion successfully completed antibiotic treatment and was confirmed to be free of *T. equigenitalis*.

The positive stallion was imported into the United States in March 2010 from a country not known to be affected by CEM. NVSL determined that the strain of the isolated bacterium did not match any *T. equigenitalis* strains previously found in the United States, indicating this case was not related to the multi-State CEM outbreak in late 2008.

A total of 23 horses exposed to the positive imported stallion were located and tested for *T. equigenitalis*. Five exposed stallions were located in California, and 18 exposed mares were located in a total of 8 States. All exposed horses completed an appropriate testing protocol and were found negative for *T. equigenitalis*.

## **December 2008**

In December 2008, a Quarter Horse stallion on a central Kentucky premises was confirmed by NVSL as positive for *T. equigenitalis*, the bacterium that causes CEM. A thorough epidemiologic and diagnostic investigation was carried out to determine the origin of the CEM bacterium. Final analysis of epidemiologic and diagnostic findings from the investigation indicated that a stallion imported from Denmark in late 2000 was the likely source of the outbreak. The source stallion and 27 other horses found positive in the outbreak were treated with antibiotics and confirmed

free of *T. equigenitalis*.

NVSL determined that the strain of *T. equigenitalis* found in this outbreak did not match any strains found in other U.S. outbreaks or cases of CEM, indicating that this outbreak was not associated with cases found in three imported stallions in 2006. Further investigation and testing of exposed horses found a total of 5 mares and 23 stallions, including one that is now a gelding, positive for *T. equigenitalis*. The 23 positive stallions were found in 7 States: 1 in Georgia, 3 in Illinois, 3 in Indiana, 1 in Iowa, 4 in Kentucky, 1 in Texas, and 10 in Wisconsin. The five positive mares were found in three States: two in California, two in Illinois, and one in Wisconsin.

In addition to the 28 positive horses, another 977 horses were exposed to *T. equigenitalis* in the outbreak. The 1,005 horses were found in 48 States. A total of 278 exposed or positive stallions were found in 31 States, and 727 exposed or positive mares were found in 46 States. Hawaii and Rhode Island were the only States in which an exposed or positive horse was not found.

Overall, 971 (96.6 percent) of the 1,005 horses were found to be free of *T. equigenitalis*. Six of the eight States that had a positive horse (California, Georgia, Indiana, Iowa, Kentucky, and Texas) completed the testing and treatment of all known positive and exposed horses. The remaining two States with positive horses—Illinois and Wisconsin—completed treatment and negative re-testing of all positive horses, but one or more exposed horses remained under quarantine in each of those States because they completed only one set of negative cultures.

Of the 278 stallions, 261 (93.9 percent) completed an appropriate testing and treatment protocol and were found negative for *T. equigenitalis*. Another 14 exposed stallions (5.0 percent) had one set of negative cultures but remained under quarantine indefinitely unless testing and treatment were completed in full. Three exposed stallions (1.1 percent) died, one after testing negative on one set of cultures and two prior to any testing.

Of the 727 mares, 710 (97.7 percent) completed testing and treatment and were negative for *T. equigenitalis*. Eight exposed mares (1.1 percent) did not complete their testing and remained under quarantine indefinitely unless testing and treatment were completed in full. The remaining nine mares (1.2 percent) were not tested, either because it was determined that they were never actually exposed or because of the mare's death prior to testing.

The investigation of this outbreak determined that all four of the positive Kentucky stallions were on the central Kentucky premises during the 2008 breeding season. The Texas and Indiana stallions also spent time on the Kentucky premises during 2008. The positive Wisconsin stallions were not in Kentucky, but four of them were co-located during at least one breeding season in Wisconsin with a positive stallion that was on the Kentucky premises in 2008. The fifth, sixth, seventh, eighth, ninth, and tenth Wisconsin stallions all spent time at a breeding facility used by the fourth positive Wisconsin stallion, by the three positive Illinois stallions, and by the Iowa stallion (now a gelding). The positive Georgia stallion was co-located with three positive Wisconsin stallions in 2008.

The positive Wisconsin mare was bred by the second positive stallion in Wisconsin. Each of the positive mares in Illinois and in California was bred by artificial insemination (AI) in 2008 using semen from a positive stallion. Both California mares were exposed by AI to the first positive stallion in Wisconsin, and the first Illinois mare was exposed to a positive stallion now in Indiana. The second positive mare in Illinois was exposed by AI in 2008 to the second positive Illinois stallion.

#### Distribution

The first cases of CEM were diagnosed in the 1970s, beginning in England and then in other countries in Europe and the United States. Due to the nature of CEM, it is difficult to determine how widely it is distributed throughout the world. USDA considers Japan, South Africa, Korea, all European Union countries, and many other countries in Europe (including Great Britain and Northern Ireland) to be affected with the disease. Visit the [World Organisation for Animal Health](#) for the latest information on CEM reporting around the world.

#### Testing

Veterinarians work with State or Federal animal health officials to test any horse suspected of having CEM or any horse exposed to a CEM-positive animal. You may also need to test for CEM to meet requirements for exporting horses, semen, or embryos to another country or as part of a routine breeding soundness examination. There are three ways to test for CEM: bacterial culture, blood testing, and test breeding.



Bacterial culture tests look for the bacteria that cause CEM. Veterinarians collect swabs and send them to [approved laboratories](#). They require special handling and must be processed within 48 hours of collection. It takes 7 days to get a result. Typically, the veterinarians will collect three sets of swabs for culturing during a 7- to 12-day period.

Blood testing looks for an immune response to CEM, which helps determine if a horse has recently been exposed to the disease. This complement fixation test can only be used in mares because stallions do not develop an immune response to CEM.

Test breeding is used to detect CEM in stallions under certain circumstances. A stallion is bred to two mares known to be CEM-free. Those mares are then tested for CEM. It takes 5 weeks after the test breeding and multiple tests on the mares to declare the stallion negative. Test breeding will sometimes detect bacteria that direct testing of the stallion did not detect. To maximize the chances of detecting the bacteria, USDA requires stallions to be tested by both bacterial culture and test breeding if they are known to have been exposed to the CEM bacteria or are being imported to the United States from a CEM-affected country. Test breeding is not normally required to export stallions or semen to another country. Mares are tested with bacterial culture and blood tests.

#### Recommended Sources for More Information

- [Contagious Equine Metritis](#) (430.44 KB) (APHIS factsheet)
- [WOAH: Contagious Equine Metritis](#) (World Organisation for Animal Health)

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