

Understanding Pregnancy Losses due to Leptospirosis in Cattle

Carla L. Huston, DVM, PhD, ACVPM

Dept. of Pathobiology and Population Medicine

College of Veterinary Medicine, Mississippi State University

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Poor reproductive outcomes can be caused by many factors including infertility of the bull, failure to conceive, early embryonic death, fetal death or abortion, and stillbirth. One of the most common and costly infectious causes of late-term pregnancy losses in cows is a disease called leptospirosis, or “Lepto.”

What causes leptospirosis?

“Lepto” infections are caused by spiral-shaped *Leptospira* bacteria (leptospire) which have over 400 different serovars (types). Many wild and domestic animals can be infected with leptospirosis and serve as carriers of the disease to cattle. Leptospirosis is a zoonotic disease, which means that it can be transmitted from animals to humans.

Fortunately, only a few serovars are of concern in cattle populations. Some examples of different serovars that infect cattle include *Leptospira hardjo*, *L. pomona*, *L. canicola*, *L. icterohaemorrhagiae*, and *L. grippityphosa*. *L. hardjo-bovis* is the only host-adapted lepto serovar in cattle, which means that cattle serve as the primary hosts of the organism.

What are the clinical signs of leptospirosis?

Leptospirosis causes damage to the kidneys, uterus, udder, and other organs of affected animals. Cattle infected with leptospirosis can have chronic or acute signs of infection, however, infection in most cases is clinically inapparent. The chronic form, which is most common, affects pregnant cows and causes mid to late-term abortions, stillbirths, or the birth of premature or weak calves. This is one of the most economically important causes of pregnancy losses to the US beef cattle industry. Chronically infected animals may remain carriers of the disease and continue to shed the organism for several months without showing any clinical signs. The acute form of Lepto affects mostly calves, causing high fever, inappetance, depression, and jaundice (yellowing of mucous membranes). Blood in the urine (hematuria) may be seen in more severely affected animals. In older animals acute leptospirosis also causes decreased milk production and thickened, yellow milk often contaminated with blood.

How is leptospirosis transmitted?

The Lepto organism is localized in the kidneys and carried in the urine of infected animals, which can contaminate water and soil. It is mainly transmitted directly through contact with the skin or mucous membranes of a susceptible animal. Cattle can also become infected indirectly when they drink contaminated water or come into contact with infected feed or soil. Here in the southeastern US, leptospirosis is commonly



found in our cattle herds due to the high prevalence of wildlife and the use of ponds and streams as watering sources. Due to its transmission patterns, cases of leptospirosis are often seen in the summer or fall, or following flooding conditions.

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How do you treat and prevent leptospirosis?

Treatment of leptospirosis can be successful if done early in the acute stage of infection before irreversible kidney and liver damage occurs. The leptospire is susceptible to most of the commonly used antibiotics, and treatment may or may not be warranted in an animal that has aborted.

The prevention of leptospirosis is through proper vaccination of susceptible animals with the proper serovars and restriction from potentially contaminated animals or feed and water sources. Vaccination of susceptible cattle, including bulls and replacement heifers, is the most effective tool in preventing disease. The commonly used “five-way Lepto” vaccines include antigens to the serovars that infect cattle, *Leptospira hardjo*, *L. pomona*, *L. canicola*, *L. icterohaemorrhagiae*, and *L. grippityphosa*. *Lepto hardjo-bovis* vaccines are available separately or in combination with other vaccines. Young stock should initially be vaccinated twice, 2-4 weeks apart, to develop adequate immunity. Cows should be vaccinated 6-8 weeks prior to the breeding season. In high-risk areas such as the southeastern US, vaccination is recommended at least twice a year. All of the Lepto vaccines are killed or inactivated vaccines, so vaccination of pregnant and nursing animals is generally considered safe. As always, be sure to check the vaccine label for any precautions and withdrawal times.

Reduce access of cattle to stagnant water or surface water and streams used by other livestock and wildlife when possible since wildlife such as deer, hogs, skunks, opossums, and raccoons can serve as carriers of the disease, This is not a feasible option in most livestock operations, so a proper vaccination strategy is even more important. Limit access of rodents and dogs to feed storage areas and practice good rodent control since these animals have also been shown to be effective carriers of the disease.

Proper disease control measures such as cleaning/disinfection and isolation should be practiced when ill animals are observed or when an animal aborts. Be sure to use gloves or sleeves and to wash your hands frequently when handling any potentially infectious or zoonotic materials. People should not swim in waters where animals, domestic or wild, frequently inhabit.

Pinpointing pregnancy losses

In a beef cattle operation, pinpointing reproductive losses in beef cattle due to leptospirosis or other causes can be especially challenging because you often do not know the cow has lost her calf; you may not see her return to heat, or you may not find an aborted fetus. If you are experiencing losses, contact your veterinarian as soon as possible.

If you find an aborted fetus, take the fetus and the placenta to your veterinarian or the nearest veterinary diagnostic lab as soon as possible, keeping the samples cold. Leptospire can be demonstrated in placenta and the fetus in some cases. Your veterinarian may also want to take a urine or blood sample to check for evidence of infection with Lepto. In general, infected animals develop high titers to the infecting serovar during initial phases of infection. However, a definitive diagnosis of Lepto may be difficult to achieve due to timing of the infection and the fact that most vaccinated animals will have some low levels of antibody titers to Lepto.

An accurate herd health and breeding history is essential in determining the reasons behind some of the losses you may be experiencing. Good record-keeping should be an essential component of your operation and will help you keep track of your current production levels and production goals. Work with your veterinarian to develop a solid reproductive health management program to prevent calf losses.