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Leptospirosis

What is Lepto?
Leptospira is a spirochete in the Leptospiraceae family. A spirochete is a slender, motile bacteria with a multi-layered membrane containing flagella on each end which give it the ability to move spontaneously. It's an aerobic bacterium, meaning it needs oxygen to survive and it favors temperatures between 50 and 90 degrees F.

Who does it affect?
Leptospirosis is an infectious and contagious bacterial disease of most farm animals and many wildlife species. In nature, spirochetes are shed in the urine and survive in many types of water or damp alkaline soil. In the USA, disease in farm animals is primarily due to the Leptospira serovars *hardjo, pamona, canicola, icterohaemorrhagiae* and *grippotyphosa*. However, others have also been isolated. The manifestations of this disease can vary greatly depending on the infecting serotype. It's also a zoonotic disease, meaning it can be transmitted to people.

What's the source and transmission of Lepto?
Leptospira organisms are transmitted by an infected animal's urine which comes into contact with an uninfected animal. As the disease spreads through the unvaccinated herd, the immunity of the herd increases and the incidence of the disease decreases. Once most of the animals are immune, exposure decreases and therefore immunity will start to wane. This allows cattle to become infected again, either by carriers or by some other fresh exposure to infection. It is believed there is an increase in infections during the rainy season or flooding. This organism resides in the kidneys, but can also reside in the liver, lungs and reproductive tract. It gains entry into the body by way of the eyes, nose, mouth or broken skin. It can be spread by infected rodents, raccoons, skunks, foxes or by an infected member of the herd.

What are the clinical signs?
Calves can be severely affected with acute Leptospirosis. Clinical signs can range from a fever, anorexia, difficulty breathing and jaundice. The urine may have a red color, which is blood in the urine; this is where the term 'Redwater of calves' comes from. (Redwater is also a term used in infections caused by *Clostridium haemolyticum*.) Morbidity and mortality are higher in calves than adult cattle. In adult cattle, the clinical signs can vary dramatically. They range from abnormal milk, drop in milk production, jaundice, anemia, submucosal hemorrhages and blood in the urine. Abortion storms also can occur in herds that have recently been introduced to Leptospira.

Pigs are infected primarily by rodents. Abortions that occur 2 to 4 weeks before term, are the most common manifestation of Leptospira in pigs. Piglets that are born with Leptospira may be weak or die soon after birth.

How is it diagnosed?
Serology with paired serum samples, direct culture in special media, or fluorescent antibody techniques on tissues are methods used to confirm clinical and postmortem findings. The most commonly used technique is the microscopic agglutination test (MAT). When evaluating or diagnosing a herd, sera should be obtained from various age groups.

How can it be prevented or controlled?
Annual vaccinations and confinement rearing are used for control. Annual vaccination should be used in closed herds, where semiannual vaccination should be considered for open herds. Calves and piglets can be vaccinated at 4-6months of age.

When vaccinating for the first time with Colorado Serum Company's **Lepto-5** bacterin, a booster is recommended 2-4 wks later, then annual vaccinations. Vaccinate cows 30 days prior to breeding. Colorado Serum's **Lepto-5** protects against the five most common forms of Leptospirosis found in the United States - *Leptospirosis canicola, grippotyphosa, hardjo, icterohaemorrhagiae*, and *pamona*. Bacterins may provide

protection against abortions, death and reduce renal infections, although some infections do occur. It is important to reduce transmission by controlling rodents, fencing cattle from potentially contaminated streams and ponds, separating cattle from pigs and wildlife, and selecting replacement stock from herds that are seronegative for Leptospirosis.

References:

1.http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/51202.htm&word=leptospirosis%2cin%2ccattle
2.http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/51205.htm&word=leptospirosis%2cin%2cpigs
3.http://www.iowabeefcenter.org/pdfs/bch/03230.pdf
4.http://www.aces.edu/pubs/docs/A/ANR-0858/ANR-0858.pdf
5. http://www.agric.nsw.gov.au/reader/cattlehealth/leprospirosis-cattle-herds.htm
6. Proceedings of the 6th Western Dairy Management Conference. March 12-14, 2003. Reno, NV-157. Carole A. Bolin, DVM, PhD. Department of Pathobiology and Diagnostic Investigation College of Veterinary Medicine, Michigan State University, East Lancing, MI 48824.