

Leptospirosis:

Will the real “hardjo” please step forward?

by Troy Smith

Are the conscientious cowboys who routinely vaccinate their cattle for leptospirosis (lepto) doing the right thing? Research suggests that, in some cases, the typical vaccination program may not be good enough. It's not that something is wrong with the vaccines that producers have been using. But, the products typically used won't immunize cattle against a bug that may be the real cause of some, and perhaps many, leptospirosis infections.

Lepto is a contagious, bacterial disease of cattle, as well as other animals and humans. In calves symptoms include fever; anorexia; and difficult, labored respiration. Often, jaundice may be observed. As the disease advances, kidney function is impaired.

Treatment with antibiotics, such as chlortetracycline and oxytetracycline, usually is successful when administered early. However, treatment has limited effect on progressive cases, with renal failure and death as the usual outcome.

But breeding herds face the most significant threat from leptospirosis. It is an insidious threat, since infected adult cattle seldom show any of the previously mentioned symptoms. In breeding herds, the damage comes from reproductive failure. Colonization of *Leptospira* bacteria in the renal and reproductive tracts of cows may cause late-term abortions, stillbirths, weak calves and retained placentas. Signs of subclinical herd infections include early embryonic deaths, delayed return to heat and low pregnancy rates.

A chronic kidney infection means bacteria are shed, through the urine, into the environment, posing a risk of infection to herdmates. *Leptospira* bacteria thrive under wet, warm conditions, such as standing water. Bacteria may enter healthy animals through mucous membranes of the eyes,

mouth and nose, or through skin abrasions. A reproductive tract infection may persist in cows or bulls, so the disease spreads during breeding.

Not a single threat

Hundreds of *Leptospira* bacteria serotypes exist, but not all are pathogenic. In the United States, the five types considered to be of consequence to cattle are *hardjo*, *pomona*, *grippotyphosa*, *canicola* and *icterohaemorrhagiae*. For years, various manufacturers have marketed five-way lepto vaccines capable of stimulating immunity against these five forms of leptospirosis.

More recently, another vaccine to protect against a distinctly different *Leptospira* bacterium has become available. Commonly called *hardjo-bovis*, this bug should not be confused with the “*hardjo*” contained in any of the popular five-way lepto vaccines. They are completely different.

Carole Bolin, a researcher at Michigan State University (MSU), says studies suggest that *hardjo-bovis* is the most common cause of the disease among cattle in the United States and other parts of the world. The *hardjo* strain (*prajitno*) used in typical five-way vaccines, Bolin reports, causes lepto primarily in the United Kingdom (UK), but not in the United States.

While Bolin is recognized as a leading expert on leptospirosis, some veterinarians say more research is needed before naming *hardjo-bovis* as the primary culprit. Those who believe *pomona* represents a more significant problem in many herds fear promotion of a new *hardjo-bovis* vaccine may cause producers to discount the value of traditional five-way products.

“There is a lot of marketing hype associated with the new vaccine,” says Larry Hollis, Kansas State University (K-State) Extension veterinarian. But he believes *hardjo-bovis* probably is the root of most infertility problems. For protection against the two most common forms of lepto, Hollis recommends concurrent use of a five-way product and the newer *hardjo-bovis* vaccine.

“I know of producers who have used five-way vaccine with great success, which suggests that they may have been dealing with *Lepto pomona*,” Hollis says. “And I know some producers who vaccinated four times a year with the old product and still had problems. For them, using the new product has made a difference after just one year.”

Needed protection

Texas A&M University Extension Veterinarian Steve Wikse has conducted a *hardjo-bovis* prevalence study sponsored by Pfizer Animal Health. The study suggested that *hardjo-bovis* has an average herd



prevalence of 42% among U.S. beef herds. He advises producers in high-risk areas and producers whose herds have persistent reproductive problems to consult their veterinarians concerning a complete vaccination program.

“For a comprehensive lepto control program, producers should use a standard five-way lepto vaccine, plus a vaccine that protects specifically against *hardjo-bovis*. You need both since standard (five-way vaccines) don’t have a *hardjo-bovis* component.”

Producers who suspect they have a lepto problem can have their herds tested. Testing urine and blood from a sample of the population may be adequate. A veterinarian can help determine the number of animals that should be tested, relative to total herd size.

Hollis stresses that no vaccine serves as a cure for lepto. Infections should be cleared up through administration of antibiotics. Mass treatment with chlortetracycline or oxytetracycline may be necessary in some situations before an effective immunization program can be implemented.

Hollis and Wikse agree that the emergence of *hardjo-bovis* is not just cause for drastic changes to most producers’ management practices. Producers should seek advice from their veterinarians regarding the threat this type of lepto may pose to individual operations.



Preventing leptospirosis in the breeding herd

Kansas State University (K-State) Extension Veterinarian Larry Hollis says leptospirosis (lepto) often is associated with areas of high rainfall or situations where animals have access to standing water. But that is not a hard-and-fast rule, especially for *hardjo-bovis*. Producers can consult their own veterinarians about whether the separate *hardjo-bovis* vaccine should be used in addition to a five-way lepto vaccine.

Hollis recommends annual vaccination of breeding females against lepto, starting with replacement heifers.

“Get it into replacement females early. For a lot of producers, that would be at preconditioning or weaning time. They can do it when vaccinating calves against the viral respiratory diseases and blackleg,” Hollis says. “But if the producer is in a high-risk situation, it’s better to start vaccinating heifers when they are younger — probably at branding time or when calves are 3 to 5 months of age.”

Once heifers receive their first-year vaccinations, according to product label directions, the generally preferred time to administer annual boosters is four to six weeks before breeding season begins. Producers who do not handle cows prior to breeding may want to consider giving annual lepto vaccinations when cows are pregnancy-tested.

Texas A&M University Extension Veterinarian Steve Wikse offers a practical suggestion for producers planning to breed replacement heifers that were not vaccinated for lepto as calves. In this situation, heifers could be given their initial primer dose two months prior to breeding. Wikse also advises treating heifers with oxytetracycline to eliminate any existing lepto infections. Then, the second dose of lepto vaccine is administered four weeks later.

Don’t forget the bulls. Bulls can become infected and spread lepto, so annual vaccination is advisable.