Infectious Diseases of Beef Cattle in Louisiana

Introduction
Cattle in all beef herds are subjected to some of the common diseases of cattle. Included are diseases which may interfere with pregnancy, cause abortion, and cause intestinal infection and systemic illnesses in newborn calves. Older calves, yearlings, and mature cattle may develop warts; get foot rot, cancer, chronic diarrhea and wasting, respiratory diseases, mastitis, lumpy jaw, eye and brain infections, to name a few conditions.

In addition to diseases already present in the herd, infection may be introduced by purchased herd replacements, by show cattle returning to the herd, and across fences from the herd next door. Skunks may infect cattle with leptospirosis and rabies.

The economic impact of some infectious diseases is subtle and often not realized. Vaccines are available which can induce some degree of protection against several of the major diseases of cattle. Pastured cattle whose diet does not contain adequate levels of biologically available copper, zinc, and selenium may not have optimum disease resistance. Secondary copper deficiency is a significant problem in cattle pastured on soils high in organic matter (peat) in coastal parishes.

This article lists and briefly reviews major infectious diseases of beef cattle in Louisiana.

Diseases Causing Acute, Often Fatal, Disease Outbreaks

Anaplasmosis
This disease is an important cause of mortality in Louisiana cattle. Horseflies are known transmitters of infection from cow to cow. Incubation period is 1 to 3 months. Other biting flies, mosquitoes, ticks, needles, and surgical instruments may also transmit infected red blood cells from a carrier or from an acute case to susceptible cattle. A vaccine developed at LSU is available through veterinarians. Annual vaccination of herd bulls is recommended. Problem herds may benefit from vaccination of cows as well. Herd treatments with tetracycline can stop outbreak.

Anthrax
Called charbon by French speaking Louisianans, spores of the anthrax bacillus probably still remain in the soil where outbreaks of this disease have occurred in the past. Known as anthrax endemic areas, these include the river parishes south of Baton Rouge where a major outbreak occurred in 1971 and west into St. Martin parish where confirmed cases were reported in 1971. The coastal parishes and pastures along the Red, Cane, and Ouachita Rivers have experienced anthrax. Cases were confirmed in St. Landry parish near Morrow where charbon occurred in 1975 and 1977. An effective vaccine is available. Antibiotics will interfere with vaccine.
Bacillary Hemoglobinuria (Red Water)
An infrequently diagnosed disease caused by toxins liberated by the bacterium Clostridium hemolytica.Red water is often associated with liver damage induced by the liver fluke (Fasciola hepatica), a parasite common to cattle pastured on wetlands. Affected cattle are anemic, jaundiced, have dark red colored urine (port wine), and die soon after illness becomes apparent. Vaccine is available. To maintain good protection frequent boosters, i.e. two to four times per year, may be necessary.

Blackleg
An acute, fatal disease of cattle generally four months to two years of age but the age range is 6 weeks to several years. The large, bacterial rods of Clostridium chauvoei, from feces and contaminated soil, enter the calf, perhaps through oral lesions, and localize in muscle tissue. The organisms multiply, producing toxins which kill muscle, causing a quickly fatal toxemia. Affected muscle contains small gas bubbles, hemorrhages, and is black. An inexpensive vaccine is available. Multiple antigen vaccines are available which include several diseases caused by related Clostridium sp. bacteria.

Hemorrhagic Enterotoxemia
Disease of calves from several days old up to perhaps one month. The cause is toxin produced by Clostridium perfringens type C growing in the small intestine. An occasional cause of death in calves, Enterotoxemia tends to occur in calves that have an abundant supply of milk. Cows immunized prior to calving can provide protective antibodies to their calves though colostrum.

Leptospirosis ("Lepto")
A lethal disease of nursing calves infected with one of several types leptospira bacteria. Skunks, cattle, and other animals may shed the organism in their urine. Calves are exposed when they drink contaminated water. Affected calves become anemic, jaundiced, have dark red colored urine (port wine) and at necropsy have hemoglobin stained kidneys (blue-black or gun metal colored). Immunization and frequent boosters to cows stimulates production of antibodies which will be present in colostrum and may protect calves for up to four months.

Pasteurellosis
A common, acute, often fatal bronchopneumonia caused by lung infection with Mannheimia hemolytica, a gram negative bacterial rod. This is a major disease of cattle, young or old, at pasture, in stocker cattle programs, and in the feedlot. In cow herds, pasteurellosis commonly occurs within a few days or weeks after introducing new cattle into the herd. Illness and mortality may strike the new animals and/or the home herd. Modern vaccines given prior to exposure may reduce the economic impact of the disease to some degree. Variation in virulence and antigenic makeup of strains of the organism, the resistance of the animal including the effects of deficiencies of zinc and copper, as well as physical stress, timing of vaccination prior to stress, and other factors influence severity of pasteurellosis. Pasteurella multocida also causes bovine pneumonia.

Diseases Causing High Mortality, Affecting Individual Cattle
Brain infections such as listeriosis caused by Listeria monocytogenes and sporadic bovine encephalitis caused by Chlamydia sp. are occasionally seen in Louisiana cattle. Fatal nervous system virus infections like rabies from skunk bite and pseudorabies from feral swine are not common diagnoses. The North American form of malignant catarrhal fever is rarely seen, usually in cattle in close contact with sheep.
Economically Important Infectious Diseases

Actinobacillosis (Wooden Tongue)
The classical disease is “wooden tongue” which is actually a hard, swollen tongue. Wooden tongue can be successfully treated. Another form of actinobacillosis is formation of multiple abscesses in the throat region. Abscesses vary from golf ball to grapefruit in size and require draining and often leave lumps of scar tissue. Abscesses may affect 30 percent or more of a group of cattle. Wooden tongue is seen statewide but the multiple abscess problems tend to occur more often in south Louisiana, particularly in coastal parishes.

Actinomycosis (Lumpy Jaw)
This is a slowly developing infection of the jaw (mandible or maxilla) which may impair eating or breathing. A draining sore develops. Treatment is less effective than for wooden tongue.

Infectious Keratoconjunctivitis (Pink Eye)
Pink eye is an economically important disease which may infect 30 to 50 percent or more animals in a herd of cattle. Severity varies from mild to severe. Mild cases resolve in one to three weeks. Damage to the cornea in severe cases results in permanent scarring and loss of sight. The bacterium Moraxella bovis is the primary infectious agent. Affected cattle must be penned and treated individually. Vaccines are of variable benefit because a number of strains of Moraxella bovis exist.

Interdigital Necrobacillosis (Foot Rot)
The most important cause of lameness in beef cattle, foot rot can be a nagging problem in some herds. Environmental factors such as muddy fields, plant stubble, and rough dry ground may lead to bruising and abrasion of skin between the claws which allow certain bacteria to invade. Prompt treatment at first sign of lameness with injectable antibiotics cures most cases.

Chronic Diseases of Significant Economic Importance

Bovine Leucosis
Leucosis is virus disease of cattle often referred to as bovine lymphosarcoma because of the lymphoid tumors produced in some infected cattle. Infected cattle respond to the virus with increased levels of lymphocytes but less than ten percent of these cows eventually develop tumors. There is a BLV serum test. Tumors develop in the heart, abomasum (fourth or true stomach), and various lymph glands. The uterus and spinal cord may be involved as well. Depending on location of tumors, cattle may drop dead, have unexplained weight loss, anemia with a black stool, or develop rear limb paralysis. Presence of bovine leucosis at slaughter is cause for carcass condemnation.

Paratuberculosis (Johne’s Disease)
Pronounced yo-knee’s: a chronic, contagious disease caused by Mycobacterium avian var. paratuberculosis. It is a complex disease in which infection generally occurs in the first few weeks of the life but diarrhea does not develop until after two years of age. Many infected cattle shed the organism in their feces but never develop the diarrhea and chronic wasting disease. The herd infection rate in Louisiana beef herds is probably less than ten percent. There is no treatment or vaccine. Immediate slaughter of clinical cases is recommended.
Diseases Affecting Breeding Efficiency

Brucellosis (Bang’s disease)
Bovine brucellosis (Brucella bovis) is a bacterial infection transmitted through oral exposure to uterine discharges from infected cows at time of calving or abortion. This previously common disease has been eliminated from the state through the cooperation of the cattle industry and state-federal animal health officials. Immunization of female cattle was an important facet in effort. Research at LSU Veterinary Science Department helped establish the safety and efficacy of the vaccine currently in use. Continue vaccinating heifers at 4-11 months.

Campylobacteriosis (“Vibrio”)
An important venereal disease which causes embryo loss and two to three months of infertility after which immunity develops and pregnancy can be maintained. Vaccination of heifers and cows can provide substantial protection. Give booster annually within 30 days of breeding for best results.

Bovine Trichomoniasis
A venereal disease caused by the protozoan Trichomonas fetus. The calving interval is greatly extended in recently infected herds. Bulls remain infected for life. No approved drugs are available for treatment. Cows recover if allowed to have three estrus cycles of sexual rest. This is a difficult disease to manage but fortunately it does not appear to be common.

Bovine Bluetongue
Serum tests of Louisiana cows indicate many have experienced bluetongue virus infection, which is transmitted by “no-seeums” or biting gnats (Culicoides sp). Most infections are inapparent and very few cattle exhibit clinical signs. Signs include oral ulcerations, a cooked appearance to the dental pad lameness, and inflamed skin of the muzzle, teats, vulva, and conjunctiva. The closely related epizootic hemorrhagic disease virus of deer (EHD) may cause similar lesions. Bluetongue virus may cause an occasional abortion or birth of blind calves which have virtually no cerebral tissue (hydranencephaly).

Bovine Virus Diarrhea (BVD)
A common virus infection maintained in cattle herds by persistently infected (PI) cattle. A fetus may become a PI if it survives BVD virus infection acquired prior to 120 days of gestation. BVD virus may also cause fetal loss and abortion. Other developmental defects may include calves born with marked incoordination, cataracts, skin defects and other anomalies. An occasional clinical case of BVD, marked by diarrhea and oral erosions, is seen in yearlings. A fatal termination of PI cattle called mucosal disease is marked by diarrhea, oral ulceration and emaciation. Vaccines are available. Heifers should be immunized at 6 to 10 months of age and given boosters annually.

Infectious Bovine Rhinotracheitis (IBR)
IBR is a herpes virus infection of cattle. IBR was first recognized as a respiratory infection in feedlot cattle. It can be an important cause of abortion from field virus infection. A modified-live vaccine not cleared for use in pregnant cattle can induce abortion in susceptible cows. A related IBR herpes virus can cause inflammation of the prepuce of bulls and vagina of heifers and cows. Heifers should be vaccinated at 6 to 10 months of age and given annual boosters.

Leptospirosis (“Lepto”)
In addition to affecting nursing calves, as described above, leptospira are an important cause of abortion. Immunization begins with heifer calves and boosters are recommended at six to twelve month intervals.
Neosporosis
Abortion caused by the protozoan Neospora caninum. Ingestion of canine (dogs, coyote) feces containing the infective coccidian organism is the means of exposure for the pregnant bovine.

Several additional types of bacteria such as Chlamydia, bacilli and streptococci; as well as aspergillus and other fungi may also cause abortion.

Diseases of Young Calves

Infectious agents known to cause illness in young calves are probably present in most beef herds. E. coli and salmonellosis bacteria, corona and rota viruses, bovine respiratory syncytial virus, and other pathogens may cause disease when calves are born weak, do not receive adequate antibody protection from colostrum, and are exposed to wet, crowded conditions. Calves deficient in copper, zinc or selenium have lowered resistance to disease.

Summary of Basic Vaccination Recommendations for Cow Calf Herds

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<tr>
<th>Disease</th>
<th>Age to Vaccinate</th>
<th>Remarks, Boosters</th>
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<tr>
<td>1. Brucellosis</td>
<td>Heifers at 4-11 months</td>
<td>Dept. of Ag. representative will vaccinate.</td>
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<tr>
<td>2. 'Lepto’</td>
<td>Begin at 4-6 months along with blackleg</td>
<td>Booster every 6 months for life of cow.</td>
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<td>3. ‘Blackleg’</td>
<td>All calves 4-8 months</td>
<td>Booster annually.*</td>
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<tr>
<td>4. ‘Vibrio’</td>
<td>All heifers 1 month prior to breeding</td>
<td>Booster annually.**</td>
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<tr>
<td>5. IBR-BVD</td>
<td>Modified Live Vaccine: 6-10 months of age OR Killed Vaccine: 2 doses 2-4 weeks apart</td>
<td>*Use multiple clostridium vaccine for blackleg. If vaccinated early give booster at weaning. **Note: Combination vaccines such as combinations of Lepto, Vibrio, IBR and BVD are commonly used.</td>
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Other Vaccines
Anthrax ... used in anthrax areas
Anaplasmosis ... (bulls especially)
Pasteurella
Pinkeye ... ask your veterinarian

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