Cow Tales

BVD and less talked about aspects.

April is a transition month on the northern plains. Herds choosing to calve early are beginning to hot brand their baby calves. Other herds are just beginning their calving season. Either way, plans for the impending breeding season are well underway. Now is a good time to reconsider each herds branding and pre-breeding vaccinations for calves and the breeding herd.

Vaccination is based on a cost benefit analysis. Some herds have used limited vaccination programs and managed to survive relatively unscathed. Other producers have encroached dangerously close to forced herd liquidation after a disease event. One viral disease to consider this spring is Bovine Viral Diarrhea Virus (BVD).

BVD is a viral disease that receives a considerable amount of press. Often times it is mentioned in relation to respiratory disease and in the context of persistent infection or PI. However, BVD can rear its ugly head this time of year in the form of birth defects and/or poor doing calves with ill thrift. This is the kind of stuff veterinarians often refer to as “COOL”, the unusual derangements of biology producers prefer to avoid.

BVD has one of four effects on a developing fetus. Loss of the fetus through early embryonic death and/or abortion can occur at any point in gestation. Calves infected with BVD from 1.5 months to 4.5 or five months of gestation can become persistently infected. This is the period of time when the immune system is developing. From about 3 to 6.5 or 7 months of gestation the organ systems are developing. Calves infected during this time period can develop a number of congenital birth defects, the third outcome from fetal BVD infection. From 4.5 or 5 months through the end of gestation, the immune system is fully developed and the calves are immune competent. These calves can mount a strong enough immune response to clear the virus. Even though the calf may clear the virus, these calves may be unthrifty and are much more likely to suffer a serious disease event after birth through weaning.

Persistent infection of BVD has been discussed previously in numerous publications. It is the primary means BVD is maintained in the US cattle population. But, the congenital defects and congenital infections receive about as much airtime as Fox News allocates for Rachel Maddow commentary. Birth defects resulting from a BVD infection can be loosely grouped into three categories; those involving the brain, those affecting the eye, and a few others.

The defects affecting the brain include a poorly developed cerebellum, that portion of the brain used for balance and coordination, and/or abnormal accumulation of cerebral spinal fluid. These calves are often referred to as “water heads” or “having water on the brain”. The outward appearance of the calf’s head depends on whether or not the bones of the skull have fused together. If the fluid accumulates before the skull fuses the skull can dome outward. These calves often have a dished face and a shortened nose. If the fluid accumulates after the skull has fused the calf will appear normal. In this case the expanding fluid volume effectively compresses the brain against the boney skull greatly decreasing the function ability of the brain. These “water heads” have great difficulty with physical coordination and their movement resembles Lindsay Lohan after a late night drinking binge. In fact, many of these calves never learn to nurse normally and may not ever stand unassisted. They may have a stiff neck and/or arch their head over their back.

Defects of the eye include cataracts, abnormally small eyes, and/or blindness. It is hard to effectively describe cataracts in words creating a vivid meaningful image. However, I usually describe cataracts as a cloudy eye that
is cloudy on the inside as opposed to outer surface as in pinkeye. Cataracts involve the lens of the eye separating the front and rear chambers of the eye. Calves with a congenital cataract are not necessarily the result of BVD. Sepsis and vitamin A status have large impact on normal eye development.

Bovine Viral Diarrhea is a complex disease. The virus affects the body in many ways including congenital defects and congenital infections. There are many causes of ill thrift in newborn calves, most of which are not BVD. Additionally, birth defects can be caused by many factors with BVD being just one. As a result, producers need to work with their veterinarian to investigate unusual aberrations and create a vaccination program suited to their production challenges and goals.

Nerd Word

Hydrocephalus – a condition characterized by abnormal accumulation of cerebrospinal fluid within the cerebral ventricular system. As a consequence, the ventricles are enlarged and the brain is diminutive.