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Animal Health Fact Sheet

WEAK CALF SYNDROME OR BVD FETAL INFECTION

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A serious health problem of newborn calves was recognized 20 years ago and termed "weak calf syndrome"(WCS). The Bovine Virus Diarrhea (BVD) virus was often isolated from affected calves and from these herds. In recent years, veterinarians have again been looking at the effects of the BVD virus on the fetus. The two conditions seem to be the same, with the only difference being the terminology used. Several herds in Utah showed signs in the spring of 1993 similar to these diseases and four of these herd problems were investigated. The conclusion was that each of these herds suffered an outbreak of WCS or the effects of a BVD fetal infection.

The signs and history for both conditions are very similar. There are 15–20 different clinical signs and problems listed for WCS and BVD. Not all occur in every calf, but on a herd basis, MANY of those conditions do occur in a given herd and they occurred in the Utah herds evaluated. Some of the common signs for both conditions include:

- Calves weak at birth
- Unable or reluctant to rise
- Immature (small calves)
- Occasional abortion or mummified fetus
- Dummy calves
- Dome shaped head
- Abnormal haircoat—"karakul" coat; sparse hair; frost on back in spring and heat intolerance in summer
- "Coyote" face and muzzle
- Red, crusted muzzle
- Cataracts
- Blood clots on white of eye
- Occasional skeletal defects
- Arched back; gait problems
- Poor doing
- Die later from scours, pneumonia, abscesses (immune deficient)

A very similar problem has been identified in sheep and is called Border Disease. It results in some abortion, and mummies and in the birth of small, hairy and some "shaker" lambs.

It is caused when a virus, almost identical to the BVD virus, infects ewes that are 16-80 days pregnant. One episode usually gives lifetime protection to that ewe for lambs born later.

The BVD virus is often present in calves and herds affected with WCS. But other factors have also been shown to have a major effect on the severity of WCS in a herd. Much of this research work was done at the University of Idaho, over several years time. Cold stress (weather) was shown to cause the loss of more calves than if the weather was mild. But cold was not the only cause, by itself. A deficiency of protein in the ration fed to the dams also increased the problem. If the crude protein level was at 2 pounds per head per day, those herds had very little problem. But for every 0.1 pound less than that, the incidence of calves with WCS increased by 1%. Energy deficiency was also shown to be a factor. With cold and wind the energy requirement goes up considerably. An energy deficiency of the dam results in poor quality colostrum and contributes to an immune deficiency in the calf.

The Utah herds evaluated were shown to have the BVD virus present in them. The winter was more severe than normal for the areas in which the herds were kept. Many of the heifers were thinner than desired (lower body condition score) at calving, indicating an energy deficiency in late pregnancy. The greater than normal moisture during fall and winter in those areas had also lowered forage quality by inducing mold growth. This lowered the protein and vitamin intake of the dams. With all of the identified factors being present which contribute to WCS, we should not be surprised that it occurred. But it caused serious losses for the herds involved and there were more herds involved than just those evaluated.

How can these herd disasters be prevented or at least minimized? By controlling the contributing factors.

1. Feed pregnant dams so they are in moderate condition as they approach calving. They should maintain or gain slightly in body condition during the last 60 days of pregnancy while also providing for the rapid growth and weight gain of the calf.
2. When the weather is severe, supply extra energy and/or move them into areas with trees or windbreaks for protection.
3. Feed at least 2 pounds of crude protein per head per day during the last 60 days of pregnancy. Feed quality is important for protein and vitamin content.
4. Vaccinate replacement heifers with a MLV (modified live virus) BVD vaccine before they are bred, at 8 to 11 months of age. Two doses, 3–4 weeks apart may improve the response compared to one dose. The severe herd problems almost always involve heifers or recently introduced adult cows.

The killed BVD vaccines will not protect against the fetal effects of BVD (all four of the Utah herds evaluated had been vaccinated with killed BVD products). Even the MLV vaccines will not protect against all fetal effects. But there is good evidence the MLV vaccines will be very helpful and there is little, if any, risk in using on replacement heifers before breeding. The MLV vaccines (for BVD) must not be given to pregnant females or they may induce exactly what you are trying to prevent.

If the MLV, BVD vaccines don't prevent the problem, then it is possible to identify persistently infected BVD animals in the herd and cull them out. That technology is now available for use. It is usually only necessary to test those animals of 2–3 years of age and under. It is probably best not to keep replacement animals from groups which have suffered a herd problem with BVD fetal effects, unless the tests for persistent infection are done on the specific animals. Some calves born during those periods may be persistent carriers and shedders of BVD, even though they currently appear healthy. Even with this vaccination and testing program, there may be some BVD effect which remains in the herd and recycles each year, just from persistently infected calves which are born in the current year. These calves shed virus which infects other

calves (feti) present in the pregnant cow herd. Next year these PI calves are born into the herd and infect newly conceived calves.

The devastating incidence of WCS/BVD fetal infection can be reduced by feeding to maintain pregnant cows in moderate condition, feeding adequate energy and protein the last 60 days of pregnancy, vaccinating replacement heifers, before they reach breeding age, with a MLV, BVD vaccine and testing and culling of persistently infected animals.

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