

CHUTE TALK

A review of practice tips for the cattle producer

*Prepared By
Bold Springs Veterinary Service, Jason R. Wall, DVM*

“So Doc, explain this BVD mess, it doesn’t make much sense...”

Bovine Virus Diarrhea virus is responsible for significant economic losses in the cattle industry. Whether you’re a cow/calf producer, backgrounder/stocker, feeder or a dairyman, a BVD control program should be a part of your herd health management.

It is obvious by the name that BVD is a virus that infects cattle. There are different strains of the virus including types I and II and further classifications into cytopathic and non-cytopathic (Cyto=cell and Path=disease). For the most part, the classifications are academic and we will leave that for another discussion. Diseases or problems associated with BVD are numerous and to keep it simple this talk will focus on the organ systems affected and the resulting syndromes of each. BVD can play a part in bovine respiratory disease (Shipping Fever), can cause gastrointestinal disease, and most importantly, BVD can lead to reproductive problems.

First, BVD can lead to significant losses due to bovine respiratory disease. Since the discovery of the virus in cattle, there has been an association of BVD with Shipping Fever. The virus itself does not cause the pneumonia but sets the stage for other disease agents such as *Pasteurella*. BVD acts to suppress the immune system in affected calves. The virus acts on white blood cells and various chemicals they produce resulting in decreased ability to fight infections. This allows bacteria or other viruses to get the upper hand. A calf shedding BVD to other calves can quickly lead to a group of animals with less than adequate immune systems, and consequently, a disease outbreak.

Second, BVD can cause gastrointestinal disease. The virus can damage the cells that line the mouth and further down the GI tract and lead to oral ulcers and diarrhea. An animal, usually younger stock (less than 24 months old), acutely infected with BVD will likely have a fever and be off feed and may develop diarrhea. Severity can differ and some cattle will show little to no sickness and completely recover. During an acute infection, the calf/cow may shed the virus up to 15 days regardless of how sick they are. There are various forms of gastrointestinal disease caused by BVD and the severity and outcome can differ significantly. Hemorrhagic Syndrome is a severe bleeding GI disease that is fatal. Persistently infected calves (to be discussed in detail under reproductive disease) can develop mucosal disease with GI ulcers and diarrhea and they also do not recover and usually die within days to weeks. Again, remember the immune system suppression which can also make GI disease worse, especially in young animals.

Most importantly, BVD can cause significant reproductive problems and the main problem with the virus is how it can infect brood cows and potentially the calves in the womb. The first reproductive problem is easy to understand, BVD can cause abortions if a cow is exposed to the virus while pregnant. Abortions can be early and undetected, but can occur anytime during pregnancy in a cow that has never been exposed. Secondly, BVD can cause birth defects. Usually it occurs in cows infected with BVD around 4-5 months of pregnancy. The virus travels to the growing calf in the uterus and infects fetal cells that then grow abnormally. The most common birth defects are of the nervous system such as underdeveloped cerebellum. Lastly, a cow infected with BVD from about month 1 to month 4 of pregnancy can pass the virus to her developing calf. At this stage, the calf’s immune system is trying to determine what is self and should be part of the body from what is non-self and should be eliminated. The problem occurs because the calf’s immune system does not recognize the virus as foreign or as non-self. Since the virus is not seen as something strange, the calf’s immune system allows it to grow and become part of the calf’s ‘normal’ body. The virus is present in the calf and will always be present because the immune system does not view BVD as foreign but as part of the calf. These calves are referred to as *Persistently Infected (PI calf)* - they were infected in the womb and will always carry and shed BVD to any other animal around them. A calf that is born PI will remain PI. A calf that is not born PI will never be a PI because development of persistent infection occurs in the womb.

However, the non-PI calf can get a temporary infection that results in one of the previously described problems, GI or respiratory disease.

The persistently infected calf is the major source of BVD problems. Calves born PI can look absolutely normal and may remain in the herd for some time without ever raising a flag. Imagine the potential problems with a calf born persistently infected remaining on a farm and exposing every animal in close proximity to BVD. PI calves not only create a source of sickness for other calves in the calf group, but also expose bred cows, potentially leading to other PI calves, abortions, or birth defects. Since PI calves may appear normal, backgrounders, stockers, heifer growers, or feeders may unknowingly obtain a PI calf that then exposes all other calves in the group to the immunosuppressive virus. A PI heifer calf may reach maturity and remain in the herd as a replacement, and if she calves normally, her calf will also be persistently infected. A PI bull calf may be kept or sold as a herd sire and expose every cow and calf in his herd to BVD. PI animals can be devastating to the herd.

This brief outline hopefully provides a clearer picture of the various, complex problems caused by BVD. The question now is how do we prevent or control it. Vaccines are available and should definitely be a part of the preventative herd health plan. However, keep in mind no vaccine is 100% effective, 100% of the time. Vaccine and BVD control programs should be tailored to each farm's specific management type. In any situation, cows should be vaccinated prior to breeding to limit the possibility of reproductive disease, including the dreaded PI calf. Testing for BVD can also be useful in many situations. Various tests for BVD are available, but the most commonly utilized test requires an ear notch sample. The ear notch test can identify Persistently Infected animals. So for example, if a producer wanted to make certain no BVD PI animals were on a cow-calf farm, testing an ear notch sample from each calf and from any cow or heifer without a calf at her side would provide a good whole herd view. If a calf is negative for BVD PI, his/her dam will be negative; furthermore, if a calf is positive, his/her dam should be tested because she could potentially be BVD PI positive. Also, remember to test the herd bull(s). Backgrounders, stockers, heifer growers, or feeders may consider ear notch testing as part of the receiving protocol to limit exposure of other calves to a BVD PI animal.

Ideally, after reading this, you have a better understanding of BVD and what it can do. If nothing else, it should be apparent that preventing BVD will make a herd healthier, and as a result, more profitable. If you have any questions or if you haven't yet developed a herd health program to prevent BVD, give Bold Springs Vet Service a call and we'll be glad to assist you any way we can.