



## Bovine Viral Diarrhea Virus - More than Diarrhea

The BVD Education Project - a BVD continuing education brief by Dr. Bill Hessman, DVM

Even though the name Bovine Viral Diarrhea Virus (BVDV) implies a clinical presentation of diarrheal disease, BVDV disease shows a wide variety of clinical signs in cattle. The root of the variability in clinical signs comes from the immunosuppressive effects of the virus. BVDV is very effective in depressing the immune function of cattle allowing common, everyday pathogens to cause greater problems. While BVDV can cause diarrhea, it also can lead to Bovine Respiratory Disease (BRD), foot-rot, joint infections, pinkeye, mastitis and a host of other presentations. In fact, Bovine Respiratory Disease (BRD) is a more common clinical presentation than diarrhea.

The severity of the disease caused by BVDV ranges from completely sub-clinical, which means the animal shows no signs, to death in severe cases. Reports suggest that 70 to 90% of BVD infections occur without clinical signs. The 10-30% that do show clinical signs of BVD range from mild fever to severe, bloody diarrhea that can lead to death within 72 hours. This is due in part to the genetic variability of the virus and a multitude of host factors, including, but not limited to; age, nutrition, immune status, concurrent disease, and environmental stress factors.

With BVDV we see two forms of infection, Acute and Persistent. BVDV Acute Infection (AI), also referred to as Transient Infection (TI), occurs when an animal is exposed to the virus, becomes infected, and then the immune system clears it from the animal. Acute Infections usually last 10-14 days. The vast majority of these Acutely Infected animals do not show clinical signs of the disease process. BVDV is uniquely adapted in cattle to cause Persistent Infections (PI) following fetal exposure to the virus in the first trimester. Calves born persistently infected will carry the virus throughout their life time and continuously shed large volumes of virus. Because the virus was in the fetus when its immune system was maturing the calf believes that the virus is part of itself and does not mount an immune response to the virus.

We know that in the United States BVDV is the virus most often isolated in outbreaks of Bovine Respiratory Disease (BRD). BRD is the most common cause of morbidity and mortality in the feedyard. Whether BVD is a direct or indirect cause of BRD is arguable. It may have a direct effect on the respiratory system but it is important to note that these affects can be due to the immunosuppressive nature of BVD virus. BVD will drastically decrease an animal's immune response which allows respiratory diseases to invade the lungs. This immunosuppression also allows any opportunistic diseases to wreak havoc. (Such as: Salmonella, Coccidiosis, Pasturella, and Mycoplasma)



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At present, the key to controlling BVD and BVD associated diseases is by controlling the PI animal, proper vaccination and good biosecurity. PI animals serve as the reservoir for continual transmission of the virus. If left unidentified, the PI calf sheds BVD virus to unprotected populations. Testing to identify these PI animals and removal from the herd is the most effective method to decrease their influence on the total population.

The BVD Education Project is a producer focused series of articles by Dr. Bill Hessman, DVM, Sublette Kansas, aimed at providing cattlemen with information that will allow them to protect their herds from the impact of Bovine Viral Diarrhea Virus (BVDV or BVD) and persistent infection (BVD-PI).