



Central States Testing, LLC
PO Box 876
Sublette, KS 67877
620.675.8640
www.cstbvd.com

BVDV Persistent Infection (PI) - It's Forever

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

Bovine Viral Diarrhea Virus (BVDV) is considered to be the most costly viral disease in cattle worldwide. BVDV is somewhat unique in ruminant animals in that exposure to the virus at a critical time of gestation can produce what is termed a Persistent Infection (PI) in the fetus. PI is just as the name implies, the animal is persistently infected with BVDV for life. In other words, it's forever.

BVD-PI animals are only formed during gestation and specifically from about day 40-125 of gestation. If the pregnancy survives, the calf will be born PI. Why the critical time frame? It is in this critical time of gestation that the immune system of the fetus is maturing. During this maturation process the calf's immune system is recognizing what is "self" so once the animal is born the immune system can defend against anything that has not been recognized as "self." If BVDV is present in the fetus during this process the immune system recognizes BVDV as "self" and will never mount an immune response to the virus. PI animals carry and shed large volumes of BVDV lifelong and serve as the primary reservoir for continual transmission to other animals and propagation of the virus.

The BVD-PI calf does not recognize BVDV as being foreign therefore the immune system will not mount an immune response to it and the virus will not cause disease symptoms in the PI animal. BVDV will live in harmony in the calf. PI calves will look perfectly normal and cannot be identified visually. Essentially the PI animal becomes a very efficient BVDV factory producing virus continually and in large volumes. It is these BVD-PI animals that serve as the most common source of the virus for transmission to herd or pen mates.

Studies have shown that the majority of BVD-PI animals are born to normal cows that get exposed to BVDV and become acutely infected during the critical stage of gestation. This is the scenario that occurs more than 90% of the time in BVD-PI production. We also know that BVD-PI animals can survive to maturity and make it into the reproductive herd. Any cow that is BVD-PI will always produce a calf that is BVD-PI since she always harbors BVDV in her system. Bulls that are BVD-PI can lead to many reproductive issues in the herd.

PI animals are only produced during gestation and will not develop at any other time. We can see what is termed Acute Infection (AI) or Transient Infection (TI) in PI negative animals.



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AI's or TI's are animals that become infected with BVDV from contact with the virus. These animals have an immune system that will respond to the virus and will usually clear the virus in 10-14 days.

BVD-PI animals in a herd can lead to huge reproductive inefficiencies and losses. In the feedyard, studies have shown that PI animals can increase sickness, mortality and production costs. It is obvious to see that in order to minimize the impact of BVDV in a herd or feedyard, that PI animals need to be identified and removed. Strategic testing of the herd or feedyard can be performed to identify any PI animal. Ear notch ACE testing is a simple, accurate and cost effective method used to test for BVD-PI animals.

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).