



BVDV (Bovine viral diarrhea virus) – What is it and why is it important? A guide to cattle producers and youth raising 4-H/FFA beef projects

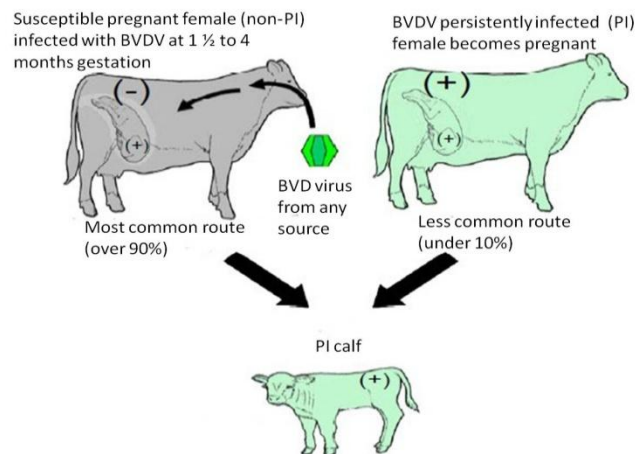
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What is BVDV?

Bovine viral diarrhea virus (BVDV) affects cattle and other ruminants and can cause a variety of problems for cattle producers including poor reproductive performance (reduced percent pregnant, increased abortion, and stillbirth) or poor calf performance (increased calf sickness and death loss).

One of the most important problems associated with this organism is the development of what is known as persistent infection (PI). Persistent infection means that an animal is already infected with the virus when it is born and it remains infected throughout its entire life. Cattle persistently infected with BVDV (BVD-PI) are the primary reservoir for BVDV infection in cattle herds, and thus are the major focus of control programs. Estimates have been reported that the presence of a PI calf in a cow herd can cost as much as \$20 per head in lost revenue due to death loss and reduced performance.

Persistent infection with BVDV occurs when certain strains of the BVD virus infects a bovine fetus sometime between 40 and 125 days of gestation. During this specific period of pregnancy, the immune system of the fetus is not developed. If BVDV infects a fetus during this time, the developing immune system thinks that the virus is a normal part of the calf and does not recognize it as abnormal. For the rest of that calf's life, its immune system will think the presence of the virus is normal. Just because a calf is born as a PI does not mean that the cow is also persistently infected with BVDV.



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Why BVD-PI is a concern for the cattle industry

Many persistently infected calves are born weak and do not survive the first few weeks of life. Most of the ones that live beyond this period fail to thrive and do not grow well. However, there are a number of these calves that appear to be perfectly normal. These animals are the ones that are the biggest risk to other cattle because they appear to be just another healthy calf. These apparently healthy animals shed huge numbers of the BVD virus particles in all body secretions. Persistently infected (PI) cattle are the major source for BVD infection and disease in cattle that come in contact with them.

Testing for BVDV

Testing for PI cattle is different than testing for many other animal diseases in that the PI status stays the same throughout the animal’s life. In other words, a non-PI animal will be negative its entire life and a PI animal will remain so it’s entire life. Because of this fact, PI testing is usually only done once. A test for PI status only needs to be repeated to confirm a positive or if evidence indicates a faulty test. As with all tests, a few false-positive and false-negative results can occur.

There are several different testing methods and strategies for determining PI status in either a herd or an individual animal. Whole blood or serum can be tested. A small patch of skin can also be tested. This skin sample is usually taken as an “ear notch”. Several factors must be considered when testing an animal such as its age and its vaccination status for BVD as these factors can influence the results of the test.

If the result of testing one of these samples is negative, then the animal is considered a non-PI animal for life. If the result of testing one of these samples is positive, a second test should be performed two to four weeks later for confirmation. If the 2nd test is negative the animal is considered a non-PI animal with a transient infection meaning that the animal has been exposed to the virus and has cleared the infection on its own. If both tests are positive then the animal is considered a PI animal. If an animal is determined to be a PI animal then it should be permanently removed from contact with other cattle or humanely destroyed.

Test Results and Interpretation		
1st Test	2nd Test	Interpretation
Negative	No test required	Non-PI animal
Positive	Negative	Non-PI animal with transient infection
Positive	Positive	PI animal

You should work with your veterinarian to collect samples for testing and interpretation of test results.





Calves being raised for 4H/FFA beef projects should have their PI status determined early in the project. If it is a home raised calf then it should be tested at the time it is chosen. If it is a purchased calf, it should be tested negative at the time of purchase.

A few state and national stock shows (including The Nebraska State Fair) now require BVDV-PI testing in order to show. If you plan to show your calf, you should review and follow requirements regarding BVDV-PI testing.

References:

Academy of Veterinary Consultants. Technical Brief. *BVD (Bovine Viral Diarrhea) Virus Control and Eradication Cow-Calf Production: Version 1.0*, 2006.

Cortese, V. *Bovine Virus Diarrhea Virus and Mucosal Disease*. In Current Veterinary Therapy: Food Animal Practice. Ed. Howard, Smith. W.B. Saunders, Philadelphia, PA. 1999, pp 286 -290.

Larson, R. *Economic, Reproductive, and Performance Effects of PI-BVD in Commercial Cattle Operations: Managing to Minimize Losses*. Proceedings of the 39th Annual Convention American Association of Bovine Practitioners, pp 99-109, 2006.

Veterinary Clinics of North America: Food Animal Practice. *Bovine Viral Diarrhea Virus: Persistence is the Key*. Ed Brock, Kenny. Saunders, Philadelphia, PA. 20:1, Mar, 2004.

