

Protect Your Herd from BVD

Early in 1994, an outbreak of Bovine Viral Diarrhea (BVD) infected more than 10,000 cattle in Ontario and Quebec. We can also expect to experience significant losses from this disease in Alberta unless we take steps to understand its spread and protect our herds.

What is BVD?

BVD is caused by a virus (BVDV), a tiny strand of genetic material (RNA) carried in a protein capsule (figure 1) which can change as it passes through an infected animal. Two distinct types of BVDV, Type 1 and Type 2, can be differentiated in the laboratory, based on the makeup of their RNA, the structure of their protein capsules and the type of antibodies that are made in response to their presence. The recent BVD outbreak in Eastern Canada was caused by a Type 2 virus first identified in this country in 1987 and recently isolated in Alberta.

Within each BVDV type, several different strains have also been identified. Furthermore, a specific virus may be either cytopathic or non-cytopathic, indicating its ability to cause visible damage to layers of cells grown in the lab. Depending on the specific strain, the resistance of the host animal and many other factors, BVDV infection may result in different levels of disease, classified as :

- subclinical - no obvious symptoms;
- chronic - long lasting but limited severity;
- acute - rapid onset, severe symptoms;
- peracute - extremely acute.

Acute and peracute BVD occurs in animals recently infected with the virus.

BVD is not a new disease - in fact 50-90% of adult cattle carry BVD antibodies, indicating prior exposure. However, the incidence of acute clinical disease in the general cattle population is less than 5%. This discrepancy is a result of the mild subclinical nature of most BVD infections.

It is not known how long the virus can persist in the environment. At low temperatures, it is quite stable and can survive for long periods of time.

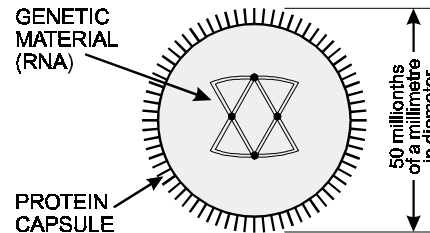


Figure 1 : Diagram of BVD virus.

Disease transmission

The key to BVDV transmission is the pregnant cow. Viral infection of the cow can result in:

- birth of a normal calf if the fetus was able to respond to the infection;
- birth of a persistently infected (PI) calf;
- eye, brain, skin and other congenital damage to the fetus;
- abortion.

The timing of these possible consequences is illustrated in figure 2.

If the fetus is infected after 125-150 days of gestation, its immune system may be able to respond to the BVDV, resulting in the birth of a calf with resistance to subsequent exposure.

The immune system of a fetus infected with a non-cytopathic virus before day 125 of pregnancy will not recognize the BVDV as an infectious agent. At birth, the calf will appear normal but will be persistently infected, shedding BVDV for life. Many of these PI calves will become dams and will themselves give birth to PI calves.

When PI calves are exposed to cytopathic BVDV, they develop chronic BVD or mucosal disease, a severe diarrhea, which will kill them. The source of this cytopathic virus is uncertain. It may be transmitted from another animal or the virus already present in the PI calf may change from the non-cytopathic to the cytopathic type.

PI animals are the main source of infection in acute outbreaks, shedding large amounts of BVDV in saliva, nasal secretions, urine and feces. The virus can spread both horizontally, from cow to cow, or vertically, from cow to calf or fetus.

Equipment such as halters, noseleads and boots can carry BVDV but all the major groups of disinfectants, including bleach, will kill it.

A clinical outbreak of disease requires more than just the presence of the virus. Resistance to BVDV is important in determining whether animals become sick after being infected. Outbreaks typically occur in herds that have never been exposed to BVDV, either naturally or in the form of a vaccine. Feedlots, with high stock densities and high proportions of young animals, are particularly vulnerable. Since spread of the virus by direct contact is a relatively slow process, outbreaks can last from several weeks to a few months.

Symptoms of BVD

Depending on the age of the animal, a variety of symptoms may be encountered :

- irregular heats due to early embryonic death;
- abortion, 2 weeks to 3 months after infection, most commonly at 5-7 months of pregnancy. The dam may not show any symptoms of sickness;
- premature birth or weak and stunted calves;
- sudden death or animals found dead in the pasture;
- milk fever signs that recur after treatment;
- death associated with acute profuse diarrhea;
- 10-50% of calves under 6 months of age may die;
- heifers and cows may be off feed, have a high fever and increased respiratory rate, have diarrhea and/or develop pneumonia;
- most cattle recover but, in severe outbreaks, 10-20% of a herd may die;
- some animals have died within 24-48 hours of becoming sick.

Treatment

There are no specific treatments for viral diseases such as BVD, all we can do is reduce risk of the disease.

Prevention

Here's how you can protect your herd from BVDV:

Prevent the introduction of infected animals by:

- bringing in only animals from uninfected herds;
- bringing in animals only from herds you know have an effective BVD vaccination program;
- avoiding purchase of animals from sales barns;
- testing new animals for persistent infection in advance of introduction;
- isolating new animals for 30 days;
- buying open replacement animals rather than pregnant ones, thus reducing the chance of the birth of a PI calf.

Decrease exposure to BVDV by:

- preventing manure contamination of feed, water and hair;
- housing baby calves in individual calf hutches;
- isolating sick animals.

Increase the herd's resistance to BVDV by:

- vaccinating according to recommendations;
- reducing stress on cattle caused by other diseases including uncomfortable housing or poor air quality;
- maximizing colostrum intake by newborn calves;
- vaccinating all incoming animals;
- increasing resistance to disease by providing quality nutrition and proper levels of vitamin A, vitamin E, selenium, copper and zinc to stimulate the cow's immune system.

prepared by :

Sjoert Zuidhof, DVM

Palliser Food Animal Services

Picture Butte : 732-5322

and

Steve Mason, Ph.D.

ProLivestock : Nutrition / Management Specialists

Calgary : 284-5484

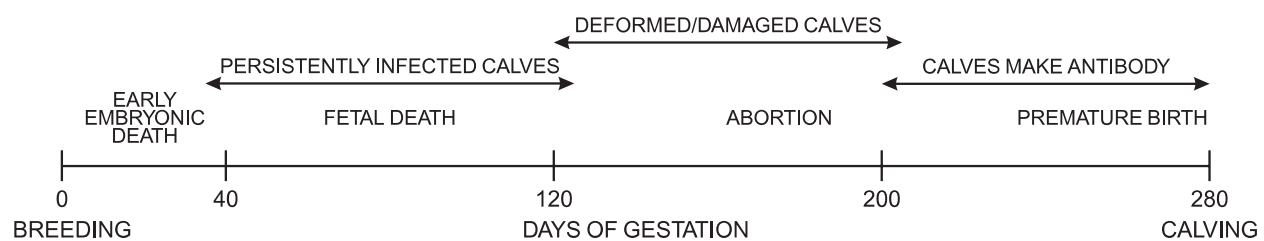


Figure 2 : Timing of the possible consequences of infection in the pregnant cow who has never been exposed and who has an immune system capable of responding to BVDV.