

BVD DISEASE OVERVIEW - BEEF



What is BVD?

BVD (Bovine Viral Diarrhea) is a viral disease which can have a high economic impact on farms. BVD is caused by Type 1 or Type 2 BVDV (Bovine Viral Diarrheal Virus). The virus is spread through direct contact with bodily fluids which include: saliva, nasal discharge, urine, feces or semen. It can also be spread by biting insects, inanimate objects, biologic products (colostrum) and other animal species. Since BVD only survives outside the body for a short time, direct contact between animals is the greatest risk for spreading the disease. Cleaning and disinfecting waterers and feeding troughs will help minimize spread as well.

How does it impact the herd?

- Could have **annual loss of \$24¹ per breeding animal** where a persistently infected (PI) animal is present
- Decreases immune response to fight off other diseases
- Negative impact on reproduction

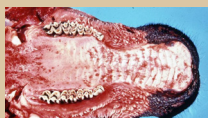
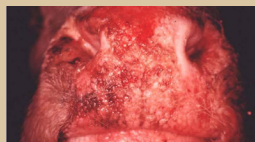
Symptoms of BVD

Symptoms of BVD are varied.

Some cattle may not display any symptoms, while others will be severely affected. The severity of affliction depends on the virus' ability to cause disease.

Symptoms:

- Fever
- Poor appetite
- Diarrhea
- Mucosal ulcers
- Depression
- Decreased milk production
- Excessive nasal secretions
- Eye irritation
- Oral ulcers
- Dehydration



An acute infection (Transient BVD) usually has a low mortality and high infection rate of the herd. Acutely infected cattle usually have a compromised immune system and have been exposed to BVD after birth.

- Most common among young cattle (6-24 months of age)
- Incubation period of 5-7 days after exposure
- Clinical signs start 6-12 days after exposure and last 1-3 days
- Recover quickly
- Visible lesions are rare
- Causes mild respiratory signs

A severe infection usually has a moderate mortality and high infection rate of the herd.

- Clinical signs start 6-12 days after exposure and last 3-7 days
- Animals will have symptoms including: a high fever of $>107^{\circ}\text{F}$, oral ulcers, irritated eyes, ulcers between claws of the feet, diarrhea, dehydration, hemorrhage and swollen lymph nodes

Be suspicious of BVD if adult cattle have:

- Nonspecific fevers at times of stress
- Decreased fertility
- Increased abortions ($>3\%/yr$)
- DOA's (Do not survive transit or other high stress situations)

For more information contact:
800.255.1181 | info@armorah.com

¹ Impact of BVD on Dairy Herd Profitability, John Vanleewun, Center for Epidemiological Research, Atlantic Veterinary College, UPEI, Canada.

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EFFECT ON CATTLE

Cattle can either be Transiently Infected (TI) or Persistently Infected (PI) animals.

TI (Transiently/Acutely Infected)

- Exposed after birth
- Most clear virus on their own
- Short incubation period
- Shed virus for 4-15 days post infection
- Can have mild-severe symptoms



PI (Persistently Infected)

- Exposed during the first trimester (40-130 days) of fetal development
- Bodies assume the virus as normal so they don't develop an immune response to BVD
- Will have a weakened immune system for life and be more susceptible to other diseases
 - » High risk for developing Mucosal Disease
 - Mucosal disease develops when a PI calf is infected with a new (different) strain of BVD
 - The calf's immune system attacks all the foreign viral-infected cells, which is usually every cell in its body and leads to severe signs of infection
 - Only PI cattle will develop Mucosal Disease and usually do not survive
- Will continually shed the virus for their entire life
- PI calves are the main source of transmission and basis of BVD survival in the cattle industry
- Can appear healthy and normal size or be a poor performing animal
- PI animals do not all die. It is common for them to look completely normal.
- PIs that live to be breeding females can transfer the virus to other animals in the herd – they will always produce a PI calf.
- PI animals cannot be cured. They will continue to shed large amounts of virus while living. Vaccination has no effect on reducing shedding from a PI calf.
- The PI animal needs to be eliminated from the herd. Once a PI calf, always a PI calf. PI calves should be humanely euthanized.
- If a PI animal is salvageable for meat, it may be safely consumed once appropriate slaughter withdrawal from any products administered is past. BVD virus is not a human pathogen.
- PI positive cattle should not be marketed. We agree with the following statement:

Statement on Disclosure of BVD PI Animals*

The cattle industry has a moral, ethical and potentially legal obligation not to sell known diseased or damaged animals to other parties without full disclosure.

Responsible disposition of animals persistently infected (PI) with bovine viral diarrhea virus (BVDV) is an important component of BVD control.

The dilemma of how to deal with known PI cattle becomes more critical as BVD testing becomes more widespread. Appropriate disposition of known PI cattle must take into account the adverse impact these cattle have on the health, welfare, and the economic return of other cattle and cattle operations they may expose to BVDV.

It is widely recognized that a PI animal is defective and once confirmed, the PI status should be thereafter disclosed – as exposure to these cattle has health ramifications for all cattle, especially those intended for reproductive purposes.

Marketing or movement of BVD PI animals in any manner that potentially exposes at-risk cattle is strongly opposed.

*Adapted from AVC Standards of Practice and AABP BVD PI disclosure position statement, 2006.

Pregnant Cattle

- BVD will cross the placental barrier and infect a fetus when the cow is exposed to BVD during the first trimester (40-130 days) of pregnancy. The virus can infect the fetus at any time, but only infection in the first 4 months will lead to a PI calf.

PI cows or cows infected with BVD during pregnancy can display:

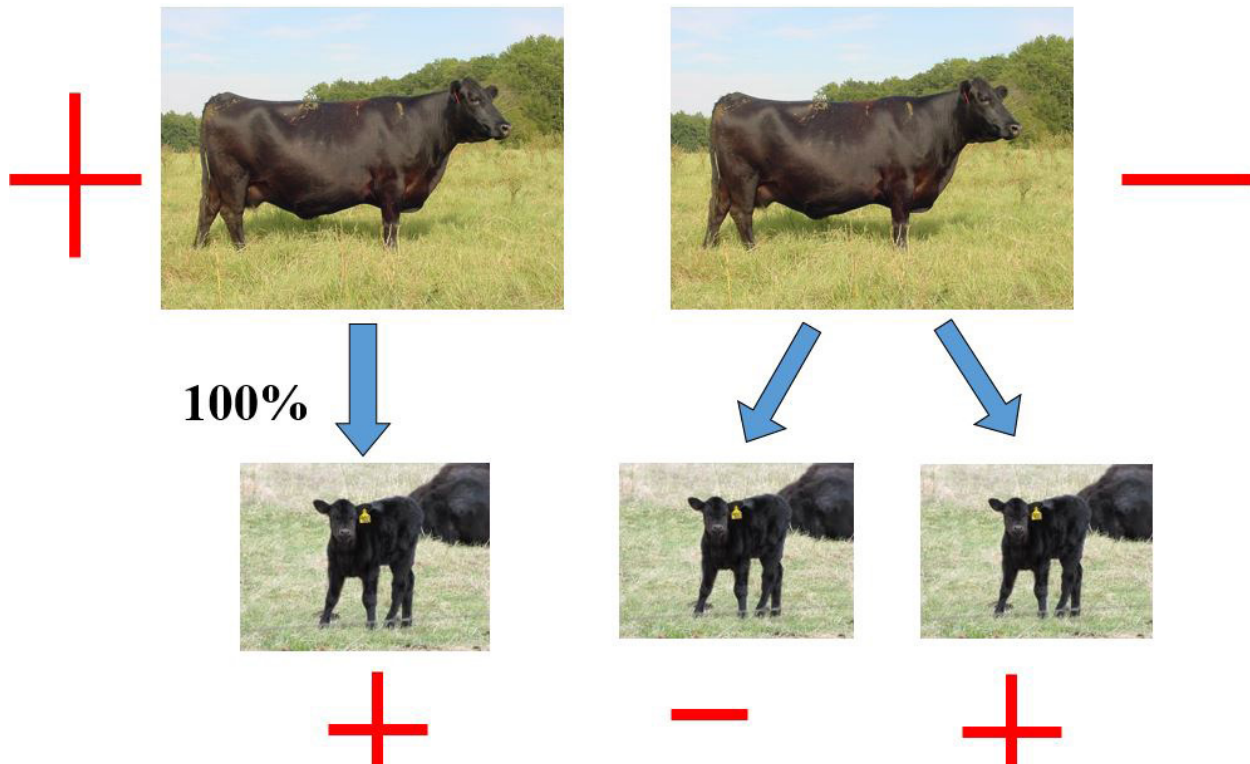
- Reduced conception rate
- Abortions
- Still births
- Premature births
- Birth defects
- Weak calves
- Stunted growth in calves

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PI CREATION AND TREATMENT

A persistently infected (PI) cow will always give birth to a PI calf. A transiently-infected cow can give birth to a PI calf or a normal, non-PI calf depending when she was exposed to BVDV while she was pregnant.



Treatment

There is **no cure** for BVD-PI cattle; treatment is limited to supportive therapy and control of the disease through management practices on the farm. Non-PI (Transiently Infected) animals should be treated with antibiotics and anti-inflammatories to prevent secondary bacterial pneumonia.

Prevention

- Test all new entries into the herd
- Identify and remove all PI cattle from the herd
 - Cull all PI cattle to slaughter

Vaccination

- Antibodies present in >90% vaccinated cattle
- Killed or modified live vaccines
- Modified live - do not vaccinate during pregnancy or illness
 - Provide quick, strong and long lasting immunity
- Killed - can use during pregnancy
 - Short duration, more frequent vaccination
 - No vaccine shown to completely protect fetus from BVD if cow exposed during pregnancy
- Contain Type 1 and Type 2 BVD

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BVD Herd Testing Q&A

Q. What is Bovine Viral Diarrhea (BVD)?

A. BVD is a virus transmitted between animals via direct contact, much like a human flu or cold.

Q. Why is it so serious?

A. BVD suppresses the animal's immune system, enabling other disease organisms to invade. Salmonellosis, coccidiosis and other opportunistic diseases are more prevalent in herds with BVD. Decreased herd level fertility is another repercussion of BVD. The disease costs the cattle industry an estimated \$1.5 to \$2.5 billion a year.

Q. Is BVD Infection always recognizable?

A. No. Calves that are infected as fetuses can become persistently infected (PI). PI animals typically show no visible signs of illness but will continue to shed the virus at a very high rate throughout their lives. These "Typhoid Mary" animals are the primary source for the spread of BVD infection in both cow herd and feedlot situations.

Q. What are the cost drivers associated with BVD Infection?

A. When a PI animal is present, studies have shown that additional expenses can cost \$24 per cow annually in the herd.* These costs are due to treatments, spontaneous abortions, slow weight gains, low conversion rates, secondary illnesses and animal deaths.

Q. Does it pay to test?

A. Studies have shown that BVD-PI-negative cattle bring a \$2/cwt premium compared to non-BVD-PI tested cattle.* Thus, a 600 lb calf would earn an additional \$12 premium for a \$2 investment or a 5:1 return on investment.

Q. How do I keep BVD PI animals out of my herd?

A. Follow a strict management schedule aimed at culling infected animals. Test new introductions before integrating into the herd.

Q. Why should I use Armor Animal Health's Lab to screen my animals?

A. Armor allows access to the industry's latest and most effective analytical methods, providing 99% accuracy and timely results for quick decision making.

(*2013 Superior Livestock data; <https://www.animalprofiling.com>)

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