

stockerFACTS

BVD Wildfire

A single head persistently infected with Bovine Viral Diarrhea can create exponential problems fast.

ESSENTIALS:

- **Understanding the Symptoms — Confirm with Testing**
- **Focus on Prevention First**
- **Manage Potential of Further Infection**

Just like a cagey corn thief robbing you blind one bushel at a time, subtle misdirection allows cattle persistently infected (PI) with Bovine Viral Diarrhea (BVD) to steal stocker profits before producers know what hit them.

In this case, the misdirection comes from the fact that BVD is most commonly associated with the cow-calf pasture as a reproductive disease (more later).

Plus, until the past few years no one knew just how much this low-prevalence, high-cost infection was costing producers because it was difficult to identify PI calves. Thanks to an accurate, fast and economic ear-notch test, though, the industry is beginning to understand just how costly PI BVD is; conversely, the test underscores how much value there is in identification, prevention and management.

As an example, a recent study conducted by West Texas A&M University and Cactus Feeders, Ltd. found that not only was morbidity 33% higher in pens of cattle where PI was identified through testing, but morbidity also ran 33% higher in pens adjacent to the one containing the PI calf.

Similarly, a study conducted by Michigan State University and Auburn University found an almost 100% increase in pull rate when calves were exposed to even a single PI calf while in transit.

The study evaluated two groups of 92 head. One group went on a truck that contained no PI calves; the other load included two PI calves. Half of the calves on each load were vaccinated for BVD with a Modified Live Virus (MLV) vaccine. Among vaccinates exposed to the PI calves, morbidity ran 18%, compared to 29% for exposed non-vaccinates. There was no morbidity among the unexposed non-vaccinates; unexposed vaccinates yielded 13% morbidity.

Like dark cutters, that's one reason why PI tends to appear in clusters: either you apparently have no problem, or you've got a major challenge within a single set of calves. Ironically, the way many stocker and feeder calves are assembled, sorted and sold means the PI calves get spread out over more groups, diluting the effect within single groups, but multiplying the problem across more of the industry.

The High Cost of Low Prevalence

For perspective, yes, BVD of the persistently infected variety is a reproductive disease propagated in the cowherd. In fact, persistent infection occurs

when bred cows are exposed to BVD prior to 125 days of gestation. Fetuses that don't abort due to the disease can become infected with it. Surviving fetuses infected with BVD read the infection as part of their normal immune system and mount no response to it.

Consequently, the virus is allowed to survive and multiply, meaning that surviving calves can shed the virus for the remainder of their lives.

In round numbers, the industry rule of thumb reckons approximately 1% of the calves born each year are PI, and that approximately half of those will die prior to weaning. So, the prevalence rate for post-weaning PI is estimated at 0.05%.

The Cactus study cited earlier corroborates this infection ballpark, finding a prevalence rate of 0.03%. Keep in mind, though, these paltry appearing numbers add up to big dollars. According to Daniel Thomson, director of Cactus' veterinary services, based on testing during the study, 26% of 1,930 head in chronic pens were PI — 3-4% of all of the deads were PI. So, Thomson says, for every 100,000 head at 0.03% prevalence, PI accounts for 42 mortalities and 26 railers!

▶ **ESSENTIAL: UNDERSTAND THE SYMPTOMS — CONFIRM WITH TESTING**

It Looks Like BVD — Is it PI?

Adding to the challenge is that PI calves won't necessarily exhibit the clinical symptoms commonly associated with BVD: profuse diarrhea, along with severe erosions and ulcers on mucosal surfaces (such as inside the mouth and between the toes). Mucosal disease is also common, which occurs when PI animals that harbor non-cytopathic BVD (a strain that doesn't kill cells) are exposed to a cytopathic (does kill cells) variant of the disease.

Cattle with acute BVD (as opposed to PI) can also exhibit clinical symptoms, including fever, snotty noses, diarrhea and Bovine Respiratory Disease (BRD). Salt in the wound comes with the fact that BVD is immunosuppressant, setting the stage for other infections to attack an already weakened immune system.

For the record, another challenge to treating BVD is the fact that there are two genotypes (Type I and

Type II) of the virus, with both types containing cytopathic and non-cytopathic biotypes.

Moreover, since the clinical symptoms mirror those associated with other common cattle health challenges, proper diagnosis of BVD, especially when it comes to persistently infected cattle is crucial to treatment and management.

As always, the first step recommended if BVD is suspected is consultation with your veterinarian who has access blood tests, pathology and virus isolation tools, in addition to herd history and clinical symptoms.

Tests that are available to diagnose acute BVD include virus isolation and blood testing. Immunohistochemistry testing of skin samples is commonly regarded as the most reliable test available for identifying PI animals at any age.

In the case of blood tests and virus isolation, clinicians at Oklahoma State University (OSU) point out, "Using whole blood or serum samples to diagnose BVD infection by virus isolation should not confused with serologic (serum) testing to determine the presence of BVD antibodies.

"The presence of BVD antibodies means the animal was exposed to the virus and that its immune system produced antibodies to eliminate the disease. Consequently, serologic testing to determine if an animal is of little or no value."

▶ **ESSENTIAL: FOCUS ON PREVENTION FIRST**

Prevention is Treatment

Although BVD vaccines exist and can reduce infection — as indicated in the study cited earlier — many animal health professionals agree the most effective way to treat infection is to avoid exposure to begin with. That has everything to do with bio-security, those practices employed to reduce disease exposure between animals and between humans and animals.

Although compiling a comprehensive list of bio-security strategies is akin to identifying all of the reasons America is great, these bear more than passing thought:

- 1. SANITATION IS THE FOUNDATION** — Basic as it sounds, is the environment cattle are placed in

conducive to bacterial and viral growth run amok? Is handling equipment kept clean and are the tools such as needles and syringes adequately cleaned and sanitized according to strategic processing protocols?

- 2. ISOLATION IS NEVER SAYING YOU'RE SORRY** — When you receive cattle, are the newcomers kept separate (quarantined) from other cattle so that if a health challenge emerges the search can be confined to or exclude the new shipment? Initial exposure and re-exposure to diseases like BVD occur through close, animal-to-animal contact.
- 3. HISTORY TELLS THE PRESENT** — While obviously not always possible, knowing specifically where incoming cattle originated can offer a leg up in animal health. In the case of PI calves, though, knowing the source offers little direct insight unless the herd of origin is consistently monitoring for PI infection via the testing described earlier. While still in the minority, a growing number of calf buyers are beginning to ask for certification that calves are coming from herds tested for PI BVD.
- 4. KNOWING IS ESSENTIAL** — Given the multiple strains of BVD, diagnosing the specifics of a particular challenge demands testing. Treating the wrong challenge with the wrong product only increases the odds that more cattle will become infected.

Literature Cited

- Kirkpatrick, John, et. al, Persistent Bovine Virus Diarrhea Infection in Cattle, Oklahoma State University
- Thomson, Daniel, et. al, PI BVD in the Feedlot, Cactus Feeders, Ltd. and West Texas A&M University.

For more information and fact sheets pertaining to other topics of interest to stocker operators, visit www.beefstockerusa.org.

This fact sheet is a product of beefstockerusa.org.

AUTHORS:

Wes Ishmael, Clear Point Communications

Dale Blasi, Beef Specialist
dblasi@oznet.ksu.edu

Mark Spire, Beef Specialist, Food Animal Health and Management Center
spire@vet.ksu.edu
