

DAIRY PIPELINE

Calfhood Vaccinations Part II. In a past issue of the *Dairy Pipeline*, we looked at BRSV—it's symptoms and treatments. This month we tackle a real threat to our industry, because many people think they are safely vaccinated against it. This month, we investigate **BVDV**. Ironically, one would think that the Bovine Viral Diarrhea Virus would manifest itself as diarrhea, but that is one of the rarest symptoms. BVD (Types I and II) attack the nervous system and some common outward signs include hairlessness (especially around the poll area,) weak calves, calves that are born blind, calves that have trouble with front legs that knuckle under, and abortions in cattle.

Type I vs. Type II—What's the Deal? BVD Type II is sometimes thought as the new kid on the block; however, that is not the case. BVD mutates very quickly and there are many different types "out in the woods." Type I and Type II vaccines have shown to have the most success preventing the disease in **healthy** calves (more on that later.) For a time, the Type I vaccine had success controlling BVD, but Type II has changed so that the "old" vaccine is not as effective. BVDV commonly infects a fetus when the mother is 60 to 180 days of gestation. The newborn calf is born with very low immunity and is usually described as "unthrifty" or a "poor doer."

But I Vaccinate Against BVD! Cattle that are most seriously infected are known as PI (persistently infected) calves and cows. They rarely live very long lives, and they do not respond well to vaccination against BVD. Thus if you have PI calves born in the herd, your vaccination program does not have a firm foundation on which to build an "immunity shield."

How do I tell I have a problem? The simplest way to test for BVD in your dairy herd is with a bulk tank test. That will tell you there is a presence of the disease in the herd. If you do have a positive tank test, your next step would be to test the herd via blood samples or skin samples. Ear notching can work well in young calves. Sampling is not cheap (\$15 per slide;) however, you can help lower the cost by placing as many as five notches per slide so that brings the price down to \$3 per animal. Cornell University offers testing and you may obtain testing through your local veterinarian.

So I find it—Then what? PI animals need to be removed from the herd as soon as possible. Shedding animals can spread millions of pathogenic particles each day. The term "ticking time bomb" is used to describe PI animals. Enough said. BVD is spread throughout the herd as PI animals expose pregnant cows and infect the fetuses. A vaccination program is imperative to helping control BVD. But that

brings up the question of Killed versus Modified Live Virus vaccines.

Killed vs. MLV Killed products are "safer" to use because they contain just the "peel" of the organism in question. They contain no pathogenic properties of the original bug. Modified Live vaccines have been altered so that while the bug is still intact, it is far less virulent than the original. Modified Live vaccines build stronger resistance, but will cause spontaneous abortions in pregnant cattle. It should be avoided if there is any doubt the animal is pregnant. MLV works well in a control program with young heifers. Interesting, **Susan Silver**, Fort Dodge Animal Health Representative suggests that a MLV vaccines work best as a follow-up to a killed virus product. So you might consider vaccinating weaned calves with a killed product and do follow-ups with a modified live product.

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Are You Using A Timed AI Program? Timed AI programs are becoming popular because herds with poor heat detection rates can achieve lower days to first service and higher pregnancy rates (PR) in contrast to when cows are inseminated via non-synchronized observed estrus. Synchronization of estrus behavior, through pharmacological control, has been used to improve reproductive efficiency since the late 1970's. Methods of synchronizing estrus were originally devised to decrease the time spent detecting estrus; however, timed AI programs, especially those that eliminate heat detection, are now being used for convenience and efficiency in reproductive management. To effectively influence reproductive performance and impact the income of the herd, a timed AI should be based on a methodical approach for the entire herd, rather than the individual cows. Approximately 50% of the profit per lactation is generated in the first 100 days of lactation. During this period the return per feed dollar is usually three to one, in contrast to late lactation when it is approximately one to one. A goal of the reproductive management program should be to have cows spend as much of their life in the early phase of lactation as possible. Thus, it is critical that the reproductive management program focus on getting a large percentage of the cows pregnant quickly after the voluntary waiting period, so that the majority of the cows will spend a sufficient proportion of their lives in early lactation. Basic research identified the existence of follicular waves and allowed for the

development of programs that synchronize both luteal regression and follicular maturation, leading to ovulation. OvSynch developed in the mid-90's allowed for the first timed AI program that obtained CR similar to those of cows inseminated following detected estrus. Modifications of the OvSynch program to maximize cows between day 5 and 12 in their estrous cycle (PreSynch) have shown a further enhancement in CR to timed AI. For best results, visual heat detection should be conducted following synchronization because cows will stay synchronized with approximately 60% of the cows initially synchronized returning to cycle 18 to 24 days following AI. Herds that have a 70 day voluntary waiting period and a heat detection program that yields an average PR of 22% are estimated to obtain an average days open of approximately 115 days or a 13-month calving interval. Therefore, it is not economically justified to use a timed AI program if the visual heat detection program produces an average PR of 22% or higher, with labor costs for heat detection of approximately \$10 per day.

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Fly control and mastitis in first lactation heifers.

Traditionally, heifers have been the cleanest group of animals in the milking herd. Over the last 10 years, though, the incidence of mastitis in first lactation heifers has increased by over 50%. Of those animals infected, 30% of them show *Staphylococcus Aureus* as the major pathogen causing infection. In the past, research has shown a link between the use of waste milk and increased mastitis in young stock. With the rising use of milk replacers we expected to see a decrease in mastitis in these animals. When this didn't happen, researchers started looking for other modes of transmission of bacteria. Recent research shows that the horn fly is a major vector of the *Staph Aureus* organism in livestock. Heifers can be bitten on the udder as early as one month of age and carry the *Staph Aureus* organism through to calving. Prevention is the key to limiting the spread of these contagious bacteria in your herd. Fly control is the number one way to do this. Fly tags alone are not sufficient. There is data to show an increasing level of resistance of flies to both the organophosphate and the pyrethrum tags. Additionally, tags do little to prevent flies from attacking udders. Pour-on insecticides offer the best solution to this problem and in addition to reducing fly populations; they provide prevention against worms and eradication of lice. Multiple summer applications of a pour on beginning in April is the key to reducing mastitis in heifers. This is the time that flies are just beginning to be active, though you may not see large numbers. All heifers, including wet calves need to be treated. Treatment needs to be repeated in June and August in order to provide maximum results. Rotation of pour-on

insecticides needs to be done every other year to reduce fly resistance. If you are currently having a problem with mastitis in your first lactation animals, culture needs to be done to isolate the causative organism. Research done by Dr. Steve Nickerson from Virginia Tech has shown that you can achieve cure rates exceeding 90% for *Staph Aureus* if you treat heifers with a dry cow product 6 – 8 weeks prior to calving. There was no difference in cure rates between dry cow products used. Cure rates for these animals if treated during lactation are 50% or less. Contact your local veterinarian for recommendations on treating heifers prior to calving and for the dose of pour-on used for young calves. *Staph Aureus* is a major mastitis pathogen in the dairy industry. It is highly contagious, difficult or impossible to cure and causes great economic losses due to lost milk and increased somatic cell counts. Prevention of this disease in first lactation animals is the best way to control its spread and reduce its economic impact.

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**** Upcoming Activities****

Professional Dairy Heifer Growers Mar 31 – April 3
Eight National Dairy Calf & Heifer
Conference, *Hotel Roanoke & Conference
Center*

Hokie Cow Classic May 27
*Virginia Tech's New Championship
River Course*

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