



River Valley Veterinary Clinic

September 2015 Newsletter

Milk Fever and DCADs

Milk Fever, or hypocalcemia, is the most common metabolic disease in dairy cattle with 50% of the 2+ lactations affected subclinically. While she may not show clinical signs, a subclinical cow post-calving will have decreased dry matter intake, decreased milk production, decreased fertility, immune suppression and an increased risk of secondary diseases such as a retained placenta or displaced abomasum. Jerseys and Guernseys are most often affected, followed by Holsteins and Brown Swiss, then Ayrshires and Milking Shorthorns. First calf heifers are rarely affected and regardless of breed, it is more common the higher the parity and the higher the milk production.

When lactation begins, there is a sudden and severe outflow in blood calcium as it is excreted into the milk and colostrum. The cow is able to extract calcium from stores in her bones, but the extraction is slow to begin and is initially unable to replace the calcium entering the milk. While each cow's calcium needs vary, most normally have a blood calcium level of 9.7-12.4 mg/dL.

Since calcium is needed for muscles to contract, insufficient calcium results in muscle weakness and paralysis, creating the characteristic symptoms of a wobbly, possibly nervous or excitable cow that eventually goes down. The muscles in her heart and blood vessels are weakened as well, so her heart beats faster to compensate; her ears feel cold due to poor circulation and a decreasing body temperature.

Hypocalcemia can be broken down into three stages. The early clinical signs begin in Stage 1, with subtle clinical signs prior to going down: weak or wobbly, excitable, nervous, hypersensitive or twitching muscles, off-feed and an elevated heart rate. This usually lasts an hour

and her blood calcium drops to 5.5-8.5mg/dL before progressing.

In Stage 2, the cow goes down due to flaccid paralysis; her muscles are so weak she is essentially paralyzed. She is depressed and rests her head on the ground tucked along her flank or extended outward. Her heart rate remains high, but is harder to hear, and blood flow to the extremities decreases causing cold limbs and ears. This stage lasts 1-12 hours and as time progresses, her rectal temperature drops, her GI motility slows and she may bloat or become constipated. Her blood calcium will be around 3.5-6.5mg/dL.

Stage 3 is seen infrequently as most cases are treated within the first two stages. The cow will be down on her side, severely bloated with a progressive loss in consciousness and is fatal in 1-3 hours. The blood calcium can be as low as 1.0mg/dL. A mid-lactation milk fever is also possible as a cow approaches her peak milk production; the symptoms and progression will be the same.

The traditional method of preventing milk fever was to reduce calcium intake during the dry period to encourage the cow to begin moving calcium out of the stores in her bones and into her blood. While this practice does reduce the incidence of milk fever, it can become expensive when feeding additional concentrates, corn silage and grass hay in place of the calcium rich alfalfa and result in over-conditioned cows. There would also be a big change in forage in the post-fresh period, creating additional stress in an already stressful period.

It is now well established that the Dietary Cation-Anion Difference (DCAD) is more important in preventing milk fever than regulating calcium intake. The DCAD of a diet is calculated from the electrolytes within it: the cations and anions. Dietary cations have a positive charge and

include sodium, potassium, calcium and magnesium. The anions have a negative charge and are chloride, sulfur and phosphorus. Diets higher in cations have a higher DCAD and will alkalinize a cow's blood, or make it more basic, which has been shown to cause milk fever. A high anionic diet with a lower DCAD acidifies the blood and can prevent milk fever.

Most dry cow diets will have a DCAD of +100 to +250 mEq/kg dry matter while the ideal for preventing milk fever is around -10 to -15 mEq/kg. A cationic salt is added to the ration to acidify the diet and lower the DCAD. However, the optimal DCAD for each farm can vary. To test if the ration is sufficiently acidified, the pH of a dry cow's urine is measured with a simple pH meter. The DCAD is effective if most cows have a urine pH of 5.5 to 6.5, but the samples must be collected after a consistent time period following

feeding of the acidified diet in order to be compared with each other. The DCAD can also be measured with the lactating cows. It has been shown that a DCAD of 25 to 40 mEq/kg will improve dry matter intake and milk production.

Another simple method of prevention is to give each cow oral calcium immediately after calving and a second dose to 2nd lactation or greater cows 12 hours later. The pills available have an extended release that provide a usable source of calcium for the cow until she can move sufficient amounts from her bones.

While milk fever is an easily treated disease when caught in time, it is always easier to prevent it where possible. We would be happy to answer your questions and work with you and your nutritionist to minimize the incidence of milk fever.

Ampicillin: the New Polyflex

The patent on Polyflex has recently expired and the drug -- Ampicillin -- is now available in its generic form. It is exactly the same drug, with the same carrier, method of action, dosing and withholds. The only difference is that it is \$4 cheaper. For the moment we will have both Polyflex and Ampicillin in stock.

Sterile Water

The 80cc bottles of sterile water are no longer on the market. However, we will be putting together our own, so their appearance might change slightly, but the product and cost will remain the same.

Save the Date!

Our customer appreciation day will be on November 12th at the Plain clinic. Put it on your calendar now and look for more information on food, fun and door prizes in the next newsletter.

Returns and Farewells

We are delighted to announce that Dr. Ashley Kruse will be returning from maternity leave on October 14th, so look for her truck! Sadly, that same day will be when we say farewell to Dr. Greg Brickner. After 22 years in practice and 12 with RVVC, he will be retiring to focus on his herd of sheep. You might still see him, though, as he will be covering evening and weekend calls through the spring.