

BARR-NORTH BULLETIN

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TREATING MILK FEVER

Hello everyone! My name is Marthe and I am a fourth year vet student working at Barr-North Vet Services as part of my production animal practical experience. On February 4, we visited a farm with a downer cow. She was a mixed breed beef cow who had calved 12 hours prior. She had been eating a diet of straw and silage and she had been found down and unable to stand. Diseases that cause cows to become unable to stand include milk fever, grass tetany, ketosis/fatty liver, hypokalemia (low potassium), hypophosphatemia (low phosphorus), and calving injuries. We diagnosed our downer cow with milk fever, administered calcium, and 30 minutes after we started treatment she was able to stand up.



WHAT IS MILK FEVER?

Milk fever is a condition where the cow becomes acutely paralyzed and usually occurs soon after calving. The paralysis results from a deficiency in blood calcium, which follows the rapid onset of milk production.

To give some context, a cow producing 10 liters of colostrum will lose 23g of calcium in a single milking. This is about 9 times as much calcium as

there is in the entire blood supply! Milk fever is a life threatening condition if not treated.

WHY IS CALCIUM IMPORTANT?

Calcium is very important for muscle contraction. In the case of milk fever, decreased calcium causes problems with the heart muscle leading to decreased cardiac output and blood flow; the intestinal smooth muscle leading to bloat and ileus; and weakened skeletal muscle leading to an inability to stand.

HOW DO YOU TREAT CALCIUM DEFICIENCY?

Calcium that is lost from the blood must be replaced. The cow does this by increasing the amount of calcium she absorbs from her diet (intestinal absorption) and mobilizing calcium from her bones (bone calcium resorption). However, calcium levels take a while to stabilize if they are depleted quickly, so to treat milk fever the veterinarian gives extra calcium to the cow via the vein, under the skin, and by mouth. It is important to give the calcium by these routes, because the route by which calcium is administered affects how quickly the calcium is available to the cow and also how long it lasts. At Barr-North, we use 3 products:

1. Calcium borogluconate (Cal-Plus®): contains magnesium and dextrose in addition to calcium. It is given IV because dextrose can be irritating to the skin if given

subcutaneously. The calcium administered IV is available to the cow immediately, and lasts up to 4 hours.

2. Calcium gluconate: contains calcium and borogluconate. It is given SC, takes 2-4 hours to be absorbed, and lasts approximately 8 hours.

3. BoviKalc® (given by the producer 6 hours after injectable calcium has been administered): contains calcium chloride and calcium sulfate in fat encapsulate boluses. It is given orally, takes 2-3 hours to be absorbed, and lasts approximately 12 - 24 hours.

With the administration of these calcium containing medications, the cow should have enough calcium to last about a day. The hope is that by this time, she will have started mobilizing the calcium stored in her bones and increased her intestinal absorption to meet the new demands on her body as she lactates.



ONE LAST INTERESTING FACT:

Since calcium has such an effect on muscle contraction, it is very important to administer IV calcium slowly over 10 minutes. If given too quickly, calcium can cause a heart attack!



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