

Subclinical hypocalcemia impacts cows and profitability

Tim Brown for *Progressive Dairy*

AT A GLANCE

Subclinical hypocalcemia affects transition cows on your dairy. How much it impacts the cows and your dairy's profitability is up to you.

Hypocalcemia impacts cows on all types of dairies. Historically, dairy producers have focused on clinical hypocalcemia, often called milk fever, because without treatment these cows don't recover. But hypocalcemia is more than just the down cow in need of treatment. It is also the cows with lower-than-normal blood calcium after calving who don't transition well but lack clinical signs to indicate treatment.

You probably know what subclinical hypocalcemia looks like, but may not know its name or realize it's a problem. Cows which are subclinically hypocalcemic often look a little droopy, don't eat well after calving or reach their expected peak milk, and sometimes are plagued with one health issue after another. It takes them a bit longer to get over the hump after calving – and sometimes they just don't. Researchers routinely report incidence rates of subclinical hypocalcemia of 40% to 80% in multiparous cows.

There is no doubt – subclinical hypocalcemia affects transition cows on your dairy. How much it impacts the cows and your dairy's profitability is up to you. We have to stop seeing transition-cow problems as normal. Dairy producers who have changed their mindset, who strive to create

responsive cows which can use their natural calcium homeostatic mechanisms to restore blood calcium quickly after calving, have drastically reduced the incidence of both clinical and subclinical hypocalcemia on their farms.

New research from Jessica McArt's team at Cornell University indicates cows may actually benefit from a slight drop in blood calcium at calving which is followed by a quick rebound to normal. In their study, cows with normal blood calcium at calving, defined as >2.15 millimoles per liter (mmol/L), or which had a slight drop (≤ 2.15 mmol/L) and recovered by two days in milk (DIM) produced 11 pounds more milk per day and had fewer negative health events than herdmates with persistently low blood calcium through four DIM or that started with normal blood calcium which later declined.

This slight drop in blood calcium at calving may be the metabolic trigger or signal the cow needs to initiate a process of natural adjustments to meet the sudden demand for calcium. As long as the blood calcium decline is not severe, and the cow's natural systems respond, calcium homeostasis is restored by two DIM and negative health and production consequences can be avoided.

The Cornell study improves our understanding of the calcium dynamics of transition cows. It's not just a matter of if the cow's blood calcium dips below normal after calving that dictates negative consequences. It is how low it drops and the duration – how long it stays below normal – that are important indicators of future cow health and productivity.

Getting nutrition right in the dry period is critical for the cow to initiate a proper response to the natural drop in blood calcium which occurs with calving. Feeding a negative dietary cation-anion difference (DCAD) diet for 21 days before calving has been shown to help cows prepare for and respond better to the high calcium demand which occurs with calving. The recent meta-analysis by Santos et al., (2019) showed that in addition to minimizing milk fever, negative DCAD diets reduced the incidence of subclinical hypocalcemia, retained placenta and metritis in all cows and improved the lactation performance of multiparous cows. DCAD diets combined with good cow comfort, feeding management, heat-stress abatement and no overcrowding can help cows have a problem-free transition into lactation.

According to Linda Baker, associate professor of clinical dairy production medicine at the University of Pennsylvania Veterinary School, the goal of the dry cow program should be to "create a responsive cow." A responsive cow has the ability to respond to the sudden decline in blood plasma calcium at calving and quickly return to normal calcium homeostasis. These cows have healthier transitions, produce more milk and are less likely to be culled from the herd.

So what are you waiting for? Transition cows represent future opportunity. In order for them to thrive, the bottlenecks which prevent them from achieving their genetic potential for high milk production must be removed. Subclinical hypocalcemia is a bottleneck which can be easily



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addressed. Feeding a negative DCAD diet (-50 to -150 milliequivalent per kilogram) to induce a mild metabolic acidosis which drops urine pH to between 6 and 7 during the close-up period can minimize negative consequences.

You have nothing to lose by trying a negative DCAD diet for close-up cows. But you have much to gain. Are you doing enough to prepare dry cows to respond to the blood calcium decline which occurs with calving? Or are you still feeding a positive DCAD diet to close-up dry cows? Decades of research have shown cows fed positive DCAD diets in the close-up period have more health problems associated with hypocalcemia and produce less milk.

If you haven't tried a negative DCAD diet for close-up cows, then you just don't know how much the incidence, severity and duration of subclinical hypocalcemia is draining from your profits and from your satisfaction. The only way to know is to implement a negative DCAD program and compare cow performance. ↪



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