Milk Fever (Hypocalcemia)

By Donna M. Amaral-Phillips

College of Agriculture, Food and Environment
Cooperative Extension Service

Cause

Shortly after calving, the requirement for calcium increases two to three fold compared to the dry period and this increased calcium requirement is a direct response to milk synthesis. The additional calcium needed must be mobilized from bone or absorbed from the small intestine as provided through the diet. For the cow shortly after calving, mobilization of calcium from bone is the most important source and needs to be "primed" prior to calving to allow for a quick response from bone cells. Decreases in the concentration of calcium in the blood are commonly seen the first day after calving with cows naturally recovering by the third to fourth day after calving. Cows whose blood calcium concentration does not recover by the third or fourth day in DIM have been shown to have more transition-related problems.

Identifying Problem Cows

Clinical hypocalcemic or milk fever cows are easily identified (cows are unsteady, lack adequate calcium for normal muscle contractions and are unable to rise.) Cows with subclinical hypocalcemia do not exhibit any of the classical milk fever signs and appear normal. However, blood samples collected 2 to 4 days after calving exhibit a lower than normal blood calcium concentration. At this time, no cow-side tests are available to monitor blood calcium concentrations in fresh cows. Blood samples taken 2 to 4 days after calving and then sent to a laboratory for calcium determination can be used to see if a problem exists in the herd. Ideally, less than 25% of fresh cows (2 to 4 DIM) should have a blood calcium concentration less than 8.6 mg/dL.

Why Prevention Is Important

Cows with subclinical hypocalcemia or milk fever have greater odds of developing a displaced abomasum, ketosis, metritis or having a retained placenta. They are less likely to exhibit estrus by 60 DIM, a common voluntary waiting period. They are 1.7 times more likely to be culled within the first 60 DIM.

Preventative Management Practices

Feeding close-up dry cows (cows within 3 weeks of expected calving date) a lower potassium diet (corn silage is lower in potassium) with added anionic salts has been shown to reduce the incidence of subclinical hypocalcemia. For these negative DCAD diets, urine pH should be measured and result in a urine pH between 5.5 and 7.0. Sometimes a mildly acidifying diet (anionic salts fed to a 0 DCAD balance) may help reduce the incidence of subclinical hypocalcemia, but is not usually as effective as the more acidifying diets. Lower potassium diets alone may help reduce the incidence of clinical milk fever, but are not as effective as when anionic salts are correctly incorporated into the close-up dry cow diet.

Use of oral calcium boluses to all fresh cows is not recommended at this time. With administration of calcium boluses, blood calcium does increase for approximately four hours post administration. Certain subgroups of cows, i.e. lame cows, older cows, and those high producing cows in the previous lactation, may benefit, but more work is needed to develop best strategies for their use. In some groups of cows, i.e. first lactation cows or below average milk production cows in the previous lactation, oral calcium boluses may be detrimental.