

## **Hypocalcemia**

The transition period, when a cow goes from being a dry cow to a lactating cow, is a time of high physiologic stress on the cow. As you know, this is a period that requires careful management and care to ensure your cows will have a productive lactation. While there are many aspects to transition cow management that are important, the focus of this newsletter will be on calcium management.

### *What is hypocalcemia?*

Dairy cows have an increased calcium demand around the time of calving to meet the needs of colostrum production and transition to lactation. This increased calcium requirement can result in hypocalcemia, or low blood calcium, in the early postpartum period. Severe hypocalcemia, also known as milk fever, is usually associated with down cows after calving. Hypocalcemia can also exist in other forms.

### *What does hypocalcemia look like?*

#### **SUBCLINICAL**

Cows with subclinical hypocalcemia do not show any outward signs, but will have lower than normal blood calcium levels, usually in the first 24-96 hours after calving. This can be an appropriate physiological response to sudden calcium deficit, and these cows often do well. Some cows, however, may develop persistent subclinical hypocalcemia and are at greater risk of disease or removal from the herd. For more information on subclinical hypocalcemia, please consult with your herd veterinarian.



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## CLINICAL

### *Stage one*

In stage one clinical hypocalcemia, a cow is still able to get up and walk around, but is showing signs of excitability and hypersensitivity. She may appear restless or weak, and could exhibit muscle tremors or head bobbing. If calcium therapy is not started, she will likely progress to stage two.

### *Stage two*

Cows in stage two are unable to stand, but are still able to sit up. In this stage cows are lethargic, they will not eat, have cold extremities (including legs and ears), and may tuck their head into their side or hold their neck in an S shape. In this stage, cows can experience smooth muscle paralysis, which leads to bloat and inability to pass manure or urine.

### *Stage three*

In stage three, cows will lie flat out and are unable to sit up. They are unresponsive and will progressively lose consciousness to the point of coma. If calcium treatment is not given, the cow can die within hours.

### *What are the negative effects of clinical hypocalcemia?*

The obvious negative effect of hypocalcemia that everyone wants to avoid is a down cow that is unable to rise. Aside from this, some negative effects that can also be associated with clinical hypocalcemia include ketosis, increased risk of displaced abomasum, decreased milk yield, fertility issues, and increased susceptibility to infectious diseases during the fresh period. All farms should have a comprehensive plan in place to both prevent and treat hypocalcemia in all cows, both down and standing.

### *How is hypocalcemia treated?*

Many producers are now using oral calcium boluses (e.g. Bovikal<sup>®</sup>) at calving, in second lactation and older animals, to help mitigate the risk of fresh cow problems. The recommendation is to give one bolus at calving and another 12 hours later. The advantages of oral boluses are the ease of use and the sustained release of calcium over 12-18 hours. This is a longer release of calcium than Calcium Borogluconate given IV or under the skin, which will boost calcium for a shorter time. Oral calcium is also best for cows with stage one clinical hypocalcemia.

If a cow is in stage two or three of milk fever, IV Calcium Borogluconate is the most appropriate treatment in combination with a bolus or Calcium Borogluconate given under the skin. It is important to make sure a down cow can swallow before administering a bolus so she doesn't choke. IV calcium should only be given to down cows, and should be given slowly to avoid heart problems. If a down cow does not respond to calcium treatment, it is advisable to collect a blood sample for analysis of calcium and phosphorous, as low blood phosphorous can also contribute to down cow syndrome.

Last but not least, another important aspect of calcium management is nutrition; a well-designed dry cow ration can help significantly with hypocalcemia problems in fresh cows. As always, don't hesitate to discuss calcium supplementation protocols with your herd veterinarian to develop a strategy that best suits your farm. If you would like to learn how to give a calcium bolus or administer calcium in the vein or under the skin, any of our veterinarians would be more than happy to help you!

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#### **Take home messages**

- Hypocalcemia can show up as both a cow down with milk fever or in standing cows that can experience negative health effects. The appropriate treatment depends on the severity of hypocalcemia.
- Calcium boluses are a great method of preventing fresh cow problems related to hypocalcemia
- If a cow doesn't respond to calcium treatment, a blood test should be run to check blood calcium and phosphorous levels

