



June 2020 Bovine Newsletter

The Economics of Ketosis Testing and Treatment

Everyone knows the important role a healthy transition period plays in the productivity of a dairy herd. Recently we have seen increased stress placed on these transition cows due to the unseasonably warm month of June. One of the first diseases we often see in stressed fresh cows is ketosis. Ketosis is a disease we see in every herd with rates differing based on nutrition, facilities, reproduction and herd management. Ketosis is a disease that occurs primarily during the first 30 days of lactation when energy demands (i.e. milking) exceed energy intake from feed. During this time, cows break down their body fat to maintain enough energy to survive. This “fat” forms ketones which flow through the bloodstream to the liver where they are used to create energy. When more ketones are produced than are used by the liver, the level of ketones in the blood becomes elevated which results in appetite depression, weight loss, decreased milk production, and in severe cases, neurological signs. Additionally, ketosis has been associated with many other post-partum conditions including metritis, mastitis, displaced abomasums (DAs), decreased reproductive performance and early culling from the herd. Due to the significant economic impact of ketosis, producers, veterinarians and nutritionists spend a significant amount of effort trying to decrease the risk of this costly disease. Despite these efforts, even the best managed herds will struggle with this disease from time to time.

There are a wide variety of management strategies we as veterinarians have promoted to monitor the incidence of ketosis and come up with treatment plans. The best strategies involve finding ketotic cows early and treating them immediately to decrease the risk of them developing additional costly diseases and decrease milk loss as a direct result of the ketosis. Studies done on ketosis show herd rates are highly variable usually ranging from 10% to 60%. Generally, we aim to see herds with a ketosis rate less than 10% when testing all fresh cows using a blood BHB meter with a cutoff point of 1.2mmol/L. Cows testing over the 1.2mmol/L cut off point are considered ketotic and are typically treated with propylene glycol +/- additional medications.

It is important that a ketone testing protocol identifies cases of ketosis in a timely manner, is cost effective and labour efficient. A recent study from The University of Cornell in Wisconsin did an economic analysis of ketosis testing in early lactation. All of the strategies in the study measured BHB levels in blood using a ketone meter with a cut off point for ketosis of >1.2mmol/L. Above 1.2mmol/L, cows were treated with oral propylene glycol.

Based on the level of ketosis present in a herd, the most economic strategy differed slightly.

- 1) Herds with a ketosis rate between 5%-50%, saw the highest economic benefit by testing all cows between 3-9 DIM two days a week (i.e. Mondays and Thursdays) and treating positive animals with propylene glycol. Per 100 fresh cows, these herds saw a mean economic benefit of US \$1166 compared to not testing and treating for ketosis.



- 2) A second option for herds with a ketosis rate between 5%-50% saw a lower economic benefit but only required testing once weekly. This strategy tested all cows between 3-16 DIM one day a week (i.e. Monday) and treated positive animals with propylene glycol. Per 100 fresh cows, these herds saw a mean economic benefit of US \$744 compared to not testing and treating for ketosis.
- 3) Herds with a ketosis rate >50% saw the highest economic benefit by blanket treating all fresh cows with propylene glycol for 5 days starting at 5 DIM.

Perhaps the most important take home message from this study was the economic benefit almost all herds would see by implementing a testing and treatment protocol for ketosis. **Herds with a ketosis rate over 15% (which would be the majority of herds), would see an economic benefit by implementing almost ANY ketosis testing and treatment strategy.**

If you are interested in implementing a ketosis testing and treatment protocol on your farm, talk to your herd veterinarian. The testing talked about in this newsletter involves collecting blood from the tail vein. This is a relatively easy and quick procedure which can be taught to you by your vet. Not only does routine testing allow us to identify and treat ketotic cows quickly, it also gives us a monitoring tool for transition cow health. If a sudden spike is seen in ketosis, further investigation can be done to determine and cause and correct the problem early. Your herd vet can also help you figure out your current ketosis rate and what economic benefits you would see on your farm with routine ketosis testing. If you already have a ketosis testing and treatment protocol, now might be a good time to review it with your herd vet to make sure it is still the most economic and labour efficient option for your operation.

Here is an example of a ketosis testing and treatment protocol we often recommend. This protocol involves also testing glucose. We test glucose in moderate to severely ketotic cows and treat them with insulin and IV dextrose as this has shown quicker rates of recovery in these more severe cases.

Test all cows 3-16 DIM one day per week (i.e. Monday) for BHB levels (purple strip)

Cows <1.2mmol/L - No action required

Cows >1.2mmol/L - Treat once daily for 3 days with 300ml of propylene glycol

Cows >2.4mmol/L - Treat once daily for 5 days with 300ml of propylene glycol

- Give 10cc of vitamaster or 2cc of vitamin B12 once daily for 5 days

- Test blood glucose (blue strip)

-Glucose >2.1mmol/L or 38mg/dL - no additional action required

-Glucose <2.1mmol/L or 38mg/dL

-give 2cc of insulin (lantus) under the skin once

-give 250mL of dextrose IV once



All cows requiring treatment for ketosis should be monitored for a DA, and retested in 1 week