

# Should You Treat Ketosis Cases?

Conventional wisdom says to treat all ketosis cases to offset harmful reproductive effects, but new data says the answer is more of a definite “maybe.” According to research results presented at the American Association of Bovine Practitioners annual meeting last fall, treatment isn’t always the solution—at least when it comes to subclinical ketosis.

The study conducted at the University of Minnesota examined whether the early treatment of postcalving ketosis (Type II, which is generally subclinical in degree) had an impact on reproductive performance, milk production and the risk of displaced abomasums (DAs) in dairy cattle. The cases were identified through a fresh-cow screening program.

## WHAT’S THE BIG DEAL?

It’s well known that ketosis, along with other metabolic diseases, can have a serious impact on dairy reproductive performance. For example, research at the University of Guelph published in 2007 found:

- The probability of pregnancy was reduced by 20% in cows with subclinical ketosis in either the first or second week postpartum.
- Also, cows above the subclinical ketosis threshold in both the first and second week postpartum were 50% less likely to be pregnant after first insemination!

With impacts like these, it’s easy to see why on-farm ketosis screening and treatment protocols have been developed. However, results from this study indicate there’s more to learn about this disease.

## TRIAL DESIGN

During the study 3,969 cows from four freestall herds were screened, and 561 cows were enrolled in the clinical trial (279 treated and 282 controls). Cows were followed until their next calving or until they were removed from the herd.

At enrollment the treated group received an IV bolus of dextrose, dexamethasone and vitamin B-12, as well as an oral bolus of propylene glycol. The oral propylene glycol was repeated on days two and three, with the three-day treatment repeated as necessary. Cows in the control group were untreated unless protracted ketosis cases showing deterioration were diagnosed. In these cases a relief, three-day treatment therapy identical to that of the treated group was administered for humane reasons.

## QUESTIONS AND ANSWERS

You would expect that the treated cows would have improved overall reproductive performance. But according to this research, that's not necessarily the case.

Using a set of statistical methods called survival analysis, the study found that median days open, or the time it takes 50% of the cows to become pregnant, was:

- 189 days for cows in the control group.
- 212 days cows in the treated group.

That was not statistically significant, explains study author Dr. Jerome Carrier, former University of Minnesota veterinarian and currently the scientific advisor for the Association des Medecins Veterinaires Praticiens du Quebec.

“An interesting finding was the strong impact on days open of having ketosis compared to normal cows,” he adds. “The median days open in normal cows was much lower at 152 days in milk.” These results offer more evidence that it's better to prevent ketosis than treat it.

“In addition, the pregnancy rate was 16% lower in treated cows relative to the control cows, but the difference was not significant,” Carrier says. “So long story short, there was no significant effect of treatment on reproduction.”

Furthermore, treatment had a significant negative impact on culling risk, especially in early lactation (prior to 75 days in milk) that was not related to reproductive culls. Again, using survival analysis, data show a 40% increase in culling for cows treated for subclinical ketosis, but reasons for this are unclear.

“Our therapeutic approach did not seem to have any useful clinical impact, although it did help in lowering blood levels of ketones and nonesterified fatty acids in the large subset of cows we looked at,” he adds.

## INTERPRETING THE RESULTS

Dr. Carrier's study suggested there may not be much value in daily screening and intervening to treat subclinically ketotic cows (ketones in urine but were otherwise healthy, eating, etc.), says Dr. Sandra Godden, University of Minnesota veterinarian.

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However, another recent study (click link at left) at Cornell University and the University of Wisconsin did find a benefit to treating these cows with oral propylene glycol?

So how should you reconcile these apparently conflicting findings?

First, keep in mind the two studies used different testing (screening) and different treatment protocols, so you should be cautious about making direct comparisons, cautions Godden. Also, note that the Cornell/Wisconsin study did not find a consistent response in all herds. Note, too, that study did not report on the overall cost-benefit of doing the testing/screening and treating.

“We used a combination of IV dextrose, dexamethasone and vitamin B-12, plus a three-day course of oral bolus propylene glycol. A different treatment approach might have had different effects, as in the recent Cornell/Wisconsin study with propylene glycol only,” says Carrier. “Our study reinforces our understanding that high ketone levels, even in the absence of clinical signs, do have an important impact on reproduction—days open,” he adds.

## ACTION STEPS?

Meanwhile, the researchers recommend:

- Continue to treat clinically ill cases as you always have (for example, off-feed clinical ketosis cows) per your herd veterinarian’s recommended protocols.
- Discuss ketosis screening and treatment protocols with your veterinarian.

As to whether it’s time for dairies to change their screening protocols, the researchers say that may be premature, but note it is definitely worth a conversation with your veterinarian.

“We do not have clear answers to the question of whether screening protocols should be changed,” says Godden. “As such, this currently has to be a question that is left to the producer and herd veterinarian to decide.”

“This decision (to change ketosis protocols or not) will have to be tailored for the dairy, considering labor, disease detection skills, facilities, within-herd ketosis incidence and risk of DAs, specific screening and treatment protocols in place, etc.,” Carrier concludes. “In some herds, elaborate screening protocols have the major advantage of increasing the level of attention given to fresh cows, but different herdspeople might have different ways of keeping an eye on at-risk cows.”

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For more information on ketosis, check out this paper (click link at left) from the University of Wisconsin.

## MONITOR HERD KETOSIS LEVELS

While daily screening for the purpose of identifying individual subclinically ketotic cows for the purpose of treatment may be of questionable value, it is still valuable to regularly test a subsample of fresh cows (for example, every two weeks test a representative number of cows, depending on herd size, between 5 to 15 days in milk) for the purpose of monitoring the prevalence of ketosis in the herd, recommends Dr. Sandra Godden, University of Minnesota veterinarian.

“If a high prevalence is detected (as when more than 15% of the group tested are ketotic), this could prompt the producer, veterinarian and nutritionist to review housing, nutrition and general management in the far-off, close-up and fresh-cow pens with a view to identify important risk factors and then correct the problem,” she explains.

1 Walsh RB, Walton JS, Kelton DE, LeBlanc SJ, Leslie KE, Duffield TF. The effect of subclinical ketosis in early lactation on reproductive performance of postpartum dairy cows. *J Dairy Sci* 2007;90(6):2788-96.

2 McArt JAA, Nydam DV, Ospina PA, Oetzel GR. A field trial on the effect of propylene glycol on milk yield and resolution of ketosis in fresh cows diagnosed with subclinical ketosis. *J Dairy Sci* 2011;94:6011-6020.