

# Dairy Reproduction Beyond Palpation

John W. Ferry, DVM  
Adams, NY

Bovine practitioners serving dairy clients traditionally demonstrate sincere concern for the financial well-being of their producers. Recognizing poor reproductive performance as a leading cause of financial loss for dairies, most veterinarians offer reproductive herd health services to rectal palpation of cows after calving, before breeding, and for pregnancy diagnosis.

Postpartum exams identify cows requiring treatment for metritis. Prebreeding exams screen for cows requiring further treatment prior to breeding, and provide estimates of stage of estrous cycle. Pregnancy diagnoses identify open cows needing to be rebred.

Reviewing DHI data since the widespread adoption of these practices, little evidence is available to support the benefit of these programs.<sup>1</sup> This data supports the need to review the goals of our reproduction efforts, and how well our efforts impact these goals.

Commonly stated goals include reducing average calving interval in the herd, and minimizing average days open. Days open past 100 days have been demonstrated to cost the producer \$2-\$5.00 per cow per day.<sup>2</sup> I question if financial loss is properly measured by examining average calving interval, or days open, or whether financial loss is better evaluated by measuring the percent of cows experiencing particularly long calving intervals. Are average calving intervals approaching 14 month less profitable than 12 month calving intervals because individual cows with 14 month calving intervals are less profitable, or because a 14 month herd average represents a high percentage of cows with much longer intervals?

Rather than concentrate on average calving interval, our goal should be to minimize the percent of cows experiencing particularly long lactations. The days open past which the individual is considered less profitable is a matter of discussion for the veterinarian and producer. The important point is to choose a measuring point for each herd, and to track the percentage of the herd that conveys past this goal.

If too many cows conceive past this point, how does our reproduction program impact performance to reduce this number? How do programs limited to rectal palpations influence the pregnancy rate prior to this set point?

Factors impacting pregnancy rate prior to our goal include voluntary waiting period (VWP), number of estrous cycles between VWP and goal, heat detection (HD), and conception rate. Past recommending an optimum, VWP is not a factor we will impact with our

programs. Profitability of reproductive programs is a factor of our impact on number of cycles, heat detection, and conception rate.

Reviewing present programs, we must ask how our palpations positively affect one or all of these areas. Certainly, number of cycles is difficult to alter through palpation, but can be increased with a proper prostaglandin protocol.

## Heat Detection

We typically strive to impact heat detection through estimates of the time of next expected estrus. Producers appreciate this service, as problem breeders finally get some semen in them (by breeding on the predicted day). I seriously doubt that many cows conceive when bred on these predictions.

Unfortunately, predicting next estrus often has a negative impact. Rather than vigilantly maintaining heat detection on the cow in question, the producer tends to breed her on the prescribed day, and hope for the best. Because she may have conceived, she is no longer a candidate for cycling with prostaglandin, eliminating our opportunity to reduce the time to next estrus. Estimating time of next heat will often have a negative impact on conception.

With the advent of prostaglandins to induce estrus, many prebreeding exams are used to estimate presence of a viable corpus luteum (CL). By only administering prostaglandin to cows with palpable CL's, producers avoid the financial loss associated with injecting cows that won't respond. This assumption has two flaws; that we can reliably palpate for functional luteal tissue, and that the saved treatment cost is less than the total cost of palpation.

The ability to detect ovarian status through palpation may not be reliable.<sup>3</sup> Inaccurate predictions are costly to the producer, due to lost opportunities to cycle cows with functional CL's that are missed in palpation.<sup>4</sup>

Routine injection of all cows not carrying service, every two weeks until found in standing heat, increases the number of estrous cycles in our optimal breeding period, and can improve heat detection. Grouping most heats into a three day period every two weeks allows the producer to concentrate heat detection efforts. Due to greater numbers of cows in heat at once, there is more estrous activity,<sup>5</sup> increasing the ability to detect heats.

---

*Presented at the Minnesota Dairy Conference for Veterinarians, The College of Veterinary Medicine, University of Minnesota, June 3-4, 1992, Dr. James Hanson, Coordinator*

## Conception

Postpartum exams may positively affect conception rate through the early treatment of metritis. Intrauterine infusion of antibiotics has been traditionally used to treat metritis, and prepare the uterus for conception. Similar results have been demonstrated with injected prostaglandins.<sup>6</sup> Disadvantages associated with intrauterine antibiotics include costs for veterinary time, farm labor, milk withholding, and the question of extra label drug use.

Postpartum cows should be evaluated for presence of metritis. This can be accomplished through a single rectal palpation by the veterinarian, or careful observation by the herdsman. Excluding the veterinarian from this decision places a great amount of responsibility on the herdsman. If this route is chosen, the veterinarian and herd owner should periodically review the success of this strategy. A third option is to inject all cows postpartum with prostaglandin. Prostaglandin treatment between 14 and 28 days postpartum has been demonstrated to reduce days to conception,<sup>7</sup> and has worked exceptionally well in our practice.

Subfertile cows are often identified through prebreeding exams (lack of ovarian structures), but how do these exams impact the outcome of these cows? Successful reproductive programs must understand the cause of poor fertility, and intervene to improve that condition. Poor fertility is often associated with body condition loss postpartum,<sup>8,9</sup> and energy balance in the early lactation cow.<sup>10</sup> These conditions are largely a factor of body condition at calving, periparturient disease, and feed bunk management postpartum.

When involved with subfertile herds, little progress is made if our approach is limited to rectalling cows and confirming their infertility. To impact these herds, we have to impact body condition postpartum. Time spent evaluating dry cow programs, reducing periparturient disease, and improving feed bunk management will give far greater returns to the producer.

## Monitoring

Once we have assessed the impact of our reproductive program, we need to agree to a set point for measuring reproductive failures. When establishing our goal for maximum days to conception, we must recognize the difference between a herd with a 14 month calving interval, and an individual cow with a 14 month interval. Some models suggest that \$2-\$5.00 lost profitability for every day open past 100 days is too high,<sup>11,12</sup> and that there is little difference in profitability from 12 to 14 month calving intervals for individual cows.<sup>13,14</sup>

When assessing reproductive performance, it may not represent an economic loss to have many individuals

near 14 months. When assessing the average calving interval for the herd, 14 months usually represents significant economic loss. If the herd averages 14 months, this often represents a high percentage grouped past 15 months. What is significant is not the average of the herd, but the percentage that will have long intervals that are clearly unprofitable.

For monitoring purposes, I calculate the percent of pregnant cows that conceived after 155 days in milk. The first goal of my reproductive program is to minimize the percent of cows that conceive past 155 days. I consider herds with greater than 30% of pregnant cows falling into this category to be problem herds, but in many herds more than 40% fall into this category. Herds with less than 25% of cows conceiving past 155 days are considered to have good reproductive health, and herds below 20% excellent.

Reviewing DHI records in high producing herds consistently demonstrates dramatic loss in 305 day production, when cows conceive before 80 days in milk. A second goal of my reproductive program is to reduce the percentage falling into this category. My optimum goal then, is to group all cows between 80 and 155 days in milk at conception.

For most herds, this does NOT allow us to extend our voluntary waiting period to 80 days. Because our first goal is to avoid long lactations, we must consider the risk factor associated with delayed VWP. If the herd has demonstrated the ability to achieve 60% of pregnancies in the time frame from 80-155 days, and our VWP is 80 days, 40% of the herd will have undesirably long lactations. If herd management limits conceptions during the optimum period to 60%, 20% need to conceive prior to 80 days to restrict the percentage conceiving past 155 days to 20%.

As herd management increases the percentage conceiving from 80-155 days, we can reduce the number of short lactations, while maintaining a low percentage over 155 days.

## Summary

To achieve reproductive goals, VWP periods must reflect the risks of increasing the percentage of long lactations. Intervention programs must impact frequency of estrus, estrus observation, and conception rate. To justify rectal palpation programs, we must demonstrate a positive impact on one or more of these factors.

Planned use of prostaglandin during the optimum breeding period can positively impact frequency of estrus, and estrus detection. Veterinarians becoming more involved in the management of the periparturient cow can impact conception at first service.

Monitoring programs should focus on the distribution of days open, rather than the average.

## References

1. Jones, Larry: Personal communication. 1992. 2. Olds, D., Cooper, T., Thrift, F.A.: Effect of days open on economic aspects of current lactations. *J Dairy Sci* 62:1167, 1979. 3. Kelton, D.F.: Accuracy of rectal palpation and of a rapid milk progesterone enzyme immunoassay for determining the presence of a functional corpus luteum in subestrus dairy cows. *Can Vet J* 32:286, 1991. 4. Ferguson, J.D.: components of progressive herd reproduction programs. *Proc Large Dairy Herd Manag Conf*. 1991. 5. Helmer, S.D., Britt, J.H.: Mounting behavior as affected by stage of estrous cycle in Holstein heifers. *J Dairy Sci* 68:1290, 1985. 6. Paisley, L.G., et al: Mechanisms and therapy for retained fetal membranes and uterine infections of cows: a review. *Therio* 25 (3): 353, 1986. 7. Young, I.M., Anderson, D.B.: First service conception rate in dairy cows treated with dinoprost tromethamine early post partum. *Vet Rec* 118:212, 1986. 8. Butler, W.R., Smith, R.D.: Interrelationships between energy balance and postpartum reproductive function in dairy cattle. *J Dairy Sci* 72:767, 1989. 9. Britt, J.H.: Cows that milk well and breed back quickly. *Proceedings 40th NC Dairy Conf* pg 14, 1991. 10. Villa-Godoy, A. et al: Association between energy balance and luteal function in lactating dairy cows. *J Dairy Sci* 71:1063, 1988. 11. Louca, A., Legates, J.E.: Production losses in dairy cattle due to days open. *J Dairy Sci* 51:573, 1968. 12. Schmidt, G.H. Effect of length of calving interval on income over feed and variable costs. *J Dairy Sci* 72:1605, 1989. 13. Ferry, J.W.: Reproductive herd health: going beyond rectal examinations. *The Comp* 14:87, 1992. 14. Holmann, F.J. et al: Economic value of days open for holstein cows of alternative milk yields with varying calving intervals: *J Dairy Sci* 67:636, 1984.

## NAXCEL®

brand of ceftiofur sodium  
sterile powder

For Intramuscular Use in Cattle.

This product may be used in lactating dairy cattle.

**CAUTION:** Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

### INDICATIONS

NAXCEL Sterile Powder is indicated for treatment of bovine respiratory disease (shipping fever, pneumonia) associated with *Pasteurella hemolytica*, *Pasteurella multocida* and *Haemophilus somnus*.

### DOSAGE AND ADMINISTRATION

NAXCEL Sterile Powder should be reconstituted as follows:

**1 gram vial** – Reconstitute with 20 mL Sterile Water for Injection or Bacteriostatic Water for Injection. Each mL of the resulting solution contains ceftiofur sodium equivalent to 50 mg ceftiofur.

**4 gram vial** – Reconstitute with 80 mL Sterile Water for Injection or Bacteriostatic Water for Injection. Each mL of the resulting solution contains ceftiofur sodium equivalent to 50 mg ceftiofur.

Reconstituted product should be used within 12 hours if stored at controlled room temperature or within 7 days if stored in a refrigerator (see STORAGE CONDITIONS).

NAXCEL should be administered by intramuscular injection to cattle at the dosage of 0.5 to 1.0 mg ceftiofur per pound of body weight (1-2 mL reconstituted sterile solution per 100 lb body weight). Selection of dosage (0.5 to 1.0 mg/lb) should be based on the practitioner's judgment of severity of disease, (i.e., extent of elevated body temperature, depressed physical appearance, increased respiratory rate, coughing and/or loss of appetite). Treatment should be repeated every 24 hours for a total of three treatments. Additional treatments may be given on days four and five for animals which do not show a satisfactory response (not recovered) after the initial three treatments.

### CONTRAINDICATIONS

As with all drugs, the use of NAXCEL Sterile Powder is contraindicated in animals previously found to be hypersensitive to the drug.

### RESIDUE WARNINGS

Neither a pre-slaughter drug withdrawal interval nor a milk discard time is required when this product is used according to label indications, dosage, and route of administration. Use of dosages in excess of those indicated or by unapproved routes of administration, such as intramammary, may result in illegal residues in tissues and/or in milk.

**NOT FOR HUMAN USE  
KEEP OUT OF REACH OF CHILDREN**

### ADVERSE REACTIONS

The use of NAXCEL Sterile Powder may result in some signs of immediate and transient local pain to the animal.

### STORAGE CONDITIONS

Store unreconstituted product in a refrigerator 2°-8°C (36°-46°F).

Store reconstituted product either in a refrigerator 2°-8°C (36°-46°F) for up to 7 days or at controlled room temperature 15°-30°C (59°-86°F) for up to 12 hours.

Reconstituted NAXCEL can be frozen for up to 8 weeks without loss in potency or other chemical properties. Carefully thaw the frozen material under warm to hot running water, gently swirling the container to accelerate thawing. The frozen material may also be thawed at room temperature.

Protect from light. Color of the cake may vary from off-white to a tan color. Color does not affect potency.

### HOW SUPPLIED

NAXCEL Sterile Powder is available in the following package sizes:

**1 gram vial**                      NDC 0009-3362-03  
**4 gram vial**                      NDC 0009-3362-04

NADA #140-338, Approved by FDA

Manufactured for

**The Upjohn Company**, Kalamazoo, MI 49001 USA

Revised May 1991

814 055 008

**Upjohn**

**Your Solution Source<sup>SM</sup>**

The Upjohn Company, Animal Health Division  
Kalamazoo, MI 49001