

Monitoring Postpartum Health in Dairy Cows

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The postpartum period of the dairy cow determines productive and reproductive responses during lactation and is therefore, a pivotal time in the production cycle of the cow. During this period, dairy cows are at risk of developing calving related diseases, such as hypocalcemia, metritis (uterine infection), ketosis and displacement of the abomasum (Curtis et al, 1983; Curtis et al, 1985). These are costly disorders with estimated economic losses ranging from \$200 to \$400 per case per lactation (Bartlett et al, 1986). Monitoring postpartum health allows the opportunity to identify sick cows early and provide supportive therapy in order to maintain dry matter intake during the transition from parturition to lactation. Monitoring postpartum health involves the examination of all cows early in the postpartum period (7 to 10 days in milk) by trained herd personnel. Parameters that can be used to evaluate health status of cows include attitude, rectal temperature and milk production.

A health monitoring program was developed in California that considers rectal temperature and attitude to evaluate cow health during the first 10 days postpartum (Upham, 1996). Rectal temperature is taken using the GLA Electronic Thermometer (GLA Agricultural Electronics, San Luis Obispo, Ca.) This thermometer is reliable and takes the temperature within 20 seconds. In addition to rectal temperature, attitude, appetite and manure are evaluated to determine whether or not the cow appears sick. Each cow is classified into a group based on the presence or absence of fever and whether or not she appears sick. Cows with rectal temperatures greater than 103.0°F are considered to have fever. Cows are considered to be sick if they appear depressed, are off feed or have low milk production. Cows that have fever and appear sick or those that appear sick but do not have fever are examined to rule out mastitis, ketosis, metritis, and displaced abomasum. Cows are then treated according to the established farm protocol. Treatment is based on the assumption that the major cause of fever early postpartum is related to metritis and that sick cows (with or without fever), have metabolic problems such as ketosis and hypocalcemia. A further assumption is that treatment early in the disease course is more economical than to let the disorder advance to stages where treatment will not be beneficial and cost effective. Supportive therapy is based on how the cow is classified according to whether or not she has fever and is sick or does not have fever but appears sick (Upham, 1996). Cows with fever that do not appear sick are not treated but are reevaluated the next day. Those cows that appear sick and do not have fever are treated with supportive calcium and energy supplements (Figure1).

Cows with an abnormal parturition (dystocia with or without retained fetal membranes (RFM)) should be monitored carefully because they are at greater risk of developing metritis, fever and hypocalcemia. Cows with an abnormal parturition had rectal temperatures greater than 103.1°F related to metritis for more days than cows that calved normally (Kristula et al, 2001). Furthermore, in cows with retained placenta with or without dystocia, hypocalcemia was observed during the first 7 days postpartum (Risco et al, 1994). Hypocalcemia, during early post partum may have major consequences on the health and productivity of the postpartum cow. Hypocalcemia may result in the “droopy cow” syndrome sometimes observed in the early postpartum period, even in cows that did not show clinical milk fever at calving (Beede et al, 1991). Cows affected with hypocalcemia have been shown to be at a greater risk to develop displaced abomasum (Delgado-Lecaroz et al, 1998; Massey et al, 1993). Calcium treatment early postpartum, particularly those cows affected with dystocia or RFM, would help restore blood calcium concentration and promote normal function of calcium-dependent organs such as the uterus, rumen and abomasum. Calcium treatment would therefore aid the cow in making a smoother transition during the early postpartum period. Intravenous calcium products can be given as in milk fever cases. Alternatively, per oral calcium products are available for treatment of hypocalcemia (Goff and Horst, 1993; Goff and Horst, 1994; Queen et al, 1993).

Treatment with antibiotics is recommended for cows that are sick and have fever. In particular, those cows that have toxic metritis may be a life threatening condition. When choosing which antibiotic to use, producers should consider efficacy, cost and potential for milk residues. It is recommended to follow label instructions under the guidance of a veterinarian. My experience is that on many dairies the wrong antibiotic is used and cows that do not require treatment are treated, resulting in unnecessary cost to the producer. Anti-inflammatory agents that may improve appetite by reducing fever can also be used in cows that have fever.

In conclusion, disorders such as, metritis, displacement of the abomasum and ketosis can be evaluated by monitoring temperature, milk production and attitude early postpartum by employing a health monitoring program. This program assures 1) that all postpartum cows are examined daily during the time when they are most susceptible to disease and 2) the implementation of judicious treatments early in the course of disease. Successful management of lactating dairy cows needs to integrate the disciplines of nutrition and herd health programs in order to optimize both milk and reproductive responses. In addition to monitoring postpartum health, Figure 2 shows a suggested time line approach for the strategic management of postpartum dairy cows to maximize milk production and pregnancy rate to first insemination.

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Figure 1. Postpartum health monitoring protocol (adapted from Upham, 1996).

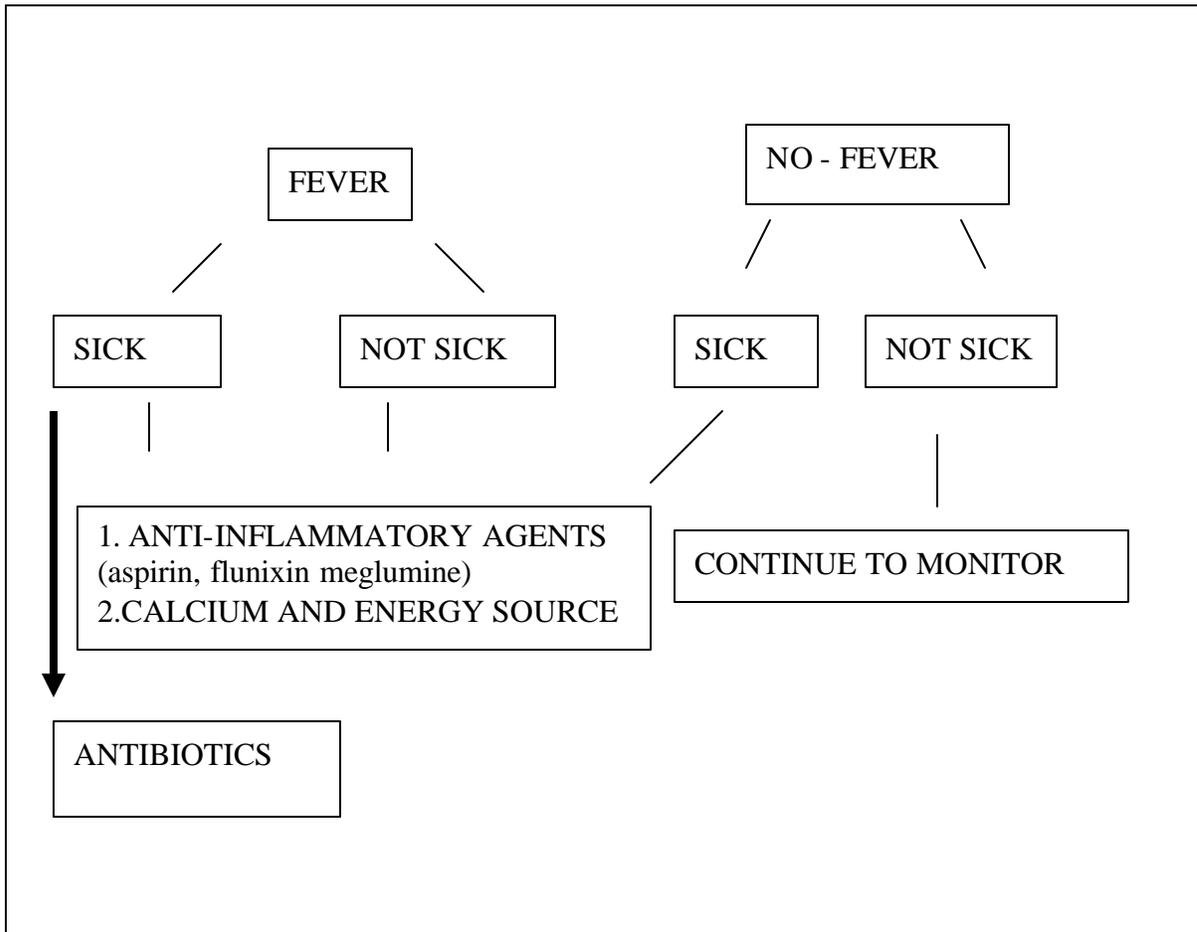
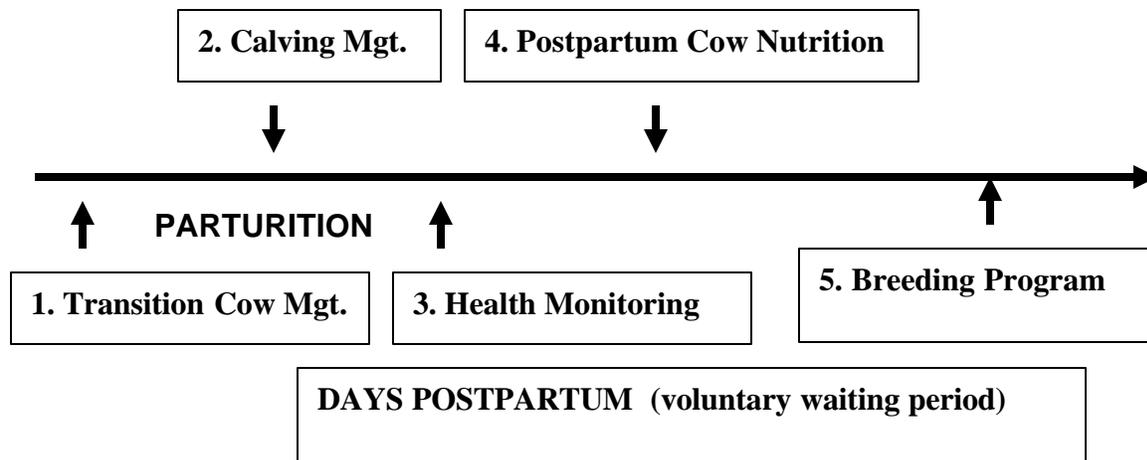


Figure 2. Time line for the strategic management of postpartum dairy cows to maximize pregnancy rate to first insemination.



1. Transition cow nutrition:

Appropriate nutritional management of the prepartum transition dairy cow with the objective of reducing the incidence of calving related disorders (milk fever, dystocia, retained fetal membranes, ketosis and metritis) which alone or collectively reduce reproductive success is an integral component of the herd's reproductive herd health program. However, in most dairy herds, attention to transition cow nutrition and management occur after problems occur. Therefore, to prevent calving related disorders from occurring at incidences which result in major economic losses, periodic evaluation of prepartum transition cow management is recommended. The following checklist to determine whether or not the nutritional management of transition cows is appropriate to prevent calving-related disorders should be followed.

- Is the ration formulated for dietary cation-anionic difference (DCAD) and balanced properly for energy, fiber, vitamins and minerals.
- Are the cows eating 24 to 26 lbs of dry matter per day (~ 2% of body weight)?
- Is there enough feedbunk space (at least 2 feet per cow)?
- Is there adequate shade (50 square feet per cow)?
- Do you provide clean, well - designed calving facilities?
- Do you evaluate body condition score during the dry period?
- Is urine pH evaluated periodically to ascertain the DCAD content of the ration?
- Is there ample clean water available for all cows?

2. Calving Management: Sound treatment and management of disorders that are associated with calving such as dystocia, milk fever, retained fetal membranes and udder edema must be followed. Who treats, what training have they received, and when and how do they treat these problems?
3. Health monitoring of all postpartum cows during the first 10 days postpartum.
4. Postpartum cow nutrition: Is the postpartum transition cow ration properly balance for energy, fiber, vitamins and minerals to maintain health and promote an early return to a positive energy balance? After calving, cows should be monitored for body condition. Cows should not loose more than one point of body condition score during the first 60 days after calving.
5. Breeding program at the end of the voluntary waiting period: Application of the OvSynch Timed Artificial insemination protocol 60 to 80 days after calving to all cows should be considered. This will assure that all cows receive an insemination at the end of the voluntary waiting period which results in an increase in the pregnancy rate to first service. Studies at the University of Florida have shown that timed insemination using OvSynch for first service in both cool and hot seasons increased net revenue per cow by \$16.57 (Risco et al, 1998) . After timed insemination, cows should be detected daily for estrus during the next 6 weeks and inseminated at detected estrus. Cows that have not been seen in estrus by the end of the 6-week period are palpated for pregnancy status. Cows that are found open can be reassigned to the OvSynch/timed AI program.