

Texas Dairy Matters

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Preventing Metritis in Lactating Dairy Cows. Part 1

Juan M. Piñeiro, DVM, MSc, Ph.D.

Extension Dairy Specialist, Department of Animal Science
Texas A&M AgriLife Extension Service, The Texas A&M University System

Guest Author: Gustavo M. Schuenemann, DVM, MSc, PhD

Professor and Dairy Extension Veterinarian
Department of Veterinary Preventive Medicine, The Ohio State University

Postpartum cows experiencing metritis require more days to conceive, produce less milk and have increased risk for early removal from the herd. This all impacts their welfare and overall herd profitability. An ounce of prevention is worth a pound of cure! Best management practices during the periparturient period of cows (aka transition period) are key to prevent postpartum diseases, primarily hypocalcemia and ketosis in early postpartum, because they determine the immune status of transition cows; thus, metritis. This article will discuss risk factors predisposing to metritis and how to control them under field conditions.

Which risk factors predispose to Metritis?

Risk factors predisposing cows to metritis, or associated concomitant diseases, are summarized in Figure 1 and could be grouped as:

- Metabolic diseases (hypocalcemia, fatty liver and ketosis) and vitamin and trace mineral deficiencies (**risk factors in purple, Fig. 1**).
- Heat stress and lack of hygienic conditions during the prepartum period of cows (**risk factors in green**).
- Calving-related events, such as difficult calving, stillbirth and lacerations of birth canal (**risk factors in red**).
- Birth weight and calf sex (**risk factors in blue**).

The underlying cause of metritis, just like most other diseases, is multifactorial in nature. Since risk factors and postpartum diseases are closely interrelated, controlling the leading risk factors associated with metritis also control the incidence of other diseases (e.g., mastitis, digestive disorders, etc.). Dairy cows have a strong behavioral need to rest, and this trait has priority over dry matter intake (DMI). Poor cow comfort leads to low DMI within the pre- and postpartum pens. Prepartum cows experiencing reduced DMI due to poor comfort (e.g.,

inconsistent bedding management or total mixed ration (TMR) within reach of cows) will likely mobilize more fat reserves prior to parturition. In turn, this predisposes cows to fatty liver and ketosis postpartum, diseases that are associated with hypocalcemia. Together, these metabolic diseases blunt the immune system predisposing to metritis.

Pathways and Risk Factors for Metritis

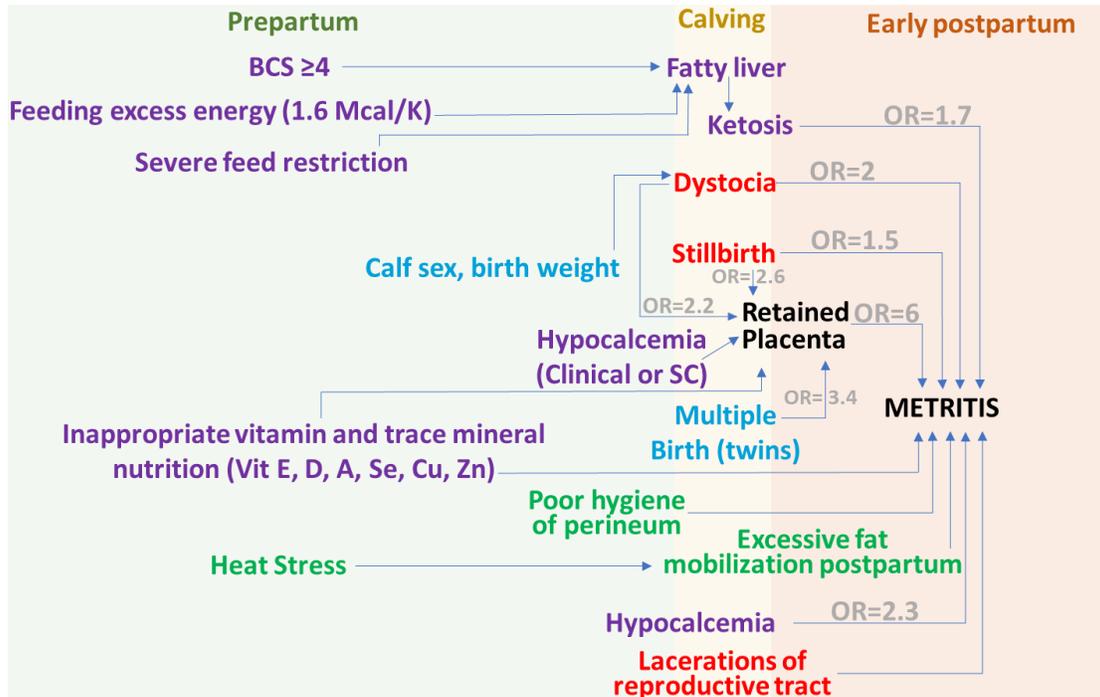


Figure 1. Pathways and risk factors for Metritis and associated diseases (OR = Odds Ratio). Adapted from Bobe et al., 2004; Correa et al., 1993; Harrison et al., 1984; Johanson and Berger, 2003; Lombard et al., 2007; Schuenemann et al., 2011; Vieira-Neto et al., 2016; Tao et al., 2012; Weiss, 2017.

How do we prevent metabolic diseases?

There are two strategies to prevent hypocalcemia: 1) Feeding a prepartum diet with low calcium (<0.55% DM) and low potassium (~ 1% DM); or 2) Feeding anionic salts to induce a controlled mild metabolic acidosis (target urine pH of ~6.2; range 5.8-6.7). Both strategies enhance the secretion of parathyroid hormone, which increases blood calcium concentration post-partum through increased bone resorption, gut absorption and kidney re-absorption of calcium. To prevent fatty liver and ketosis, these actions are recommended:

- **Previous lactation:** To dry off cows with a moderate body condition score (BCS 3.25 or 3.5), focus on your transition cow program to ensure most of your cows get pregnant in timely manner (<120 DIM).
- **Dry period:** Cows should maintain their BCS throughout the dry period. Enhance cow comfort to optimize DMI and feed a controlled energy diet (~1.3 megacalories/kg DM), rumen-protected amino acids (e.g., choline; methionine) to promote liver function early in lactation (especially for over-conditioned cows, BCS ≥ 4 using a 5-point scale).
- **Early lactation:** Maximize dry matter intake. Provide best cow comfort and feed fresh cows highly digestible forage with moderate neutral detergent fiber (~30%) to not limit intake. Provide enough crude protein (~18%), and moderate starch (~25%) to prevent ketosis but not too much that could increase the risk for acidosis and limit intake.

Does TMR and water availability matter?

The short answer is YES. When it comes to nutrition management, efforts to formulate the diet and achieve forage quality could be worthless if TMR and water are not within reach of cows. Since dry and fresh cows are critical groups, ensure TMR availability at the reach of cows for more than 22 hours per day, feed for ~4% feed refusals at the feed bunk and push feed every 2-3 hours. However, if feeding once daily and cows have risk factors that might compromise feed intake (e.g., poor cow comfort due to overstocking, commingling), feed closer to 5-7% refusals for your transition cows. Try to always keep the stocking density of transition cows at <90% of capacity relative to both feed bunk and lying space. Cows should not be waiting for water; thus, clean water should always be available, especially during summer, with ≥ 4 inches of water space per cow. When it comes to water intake, flow at the water trough matters. Water flow should allow at least six lactating cows to drink simultaneously.

Metritis is a costly disease due to decreased milk production, increased days open, and early removal from the herd. Part 2 of this article will continue to discuss how to control leading factors to decrease metritis in lactating dairy cows.

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