

A Practitioner's Approach to Management of Metritis/Endometritis

Early Detection and Supportive Treatment

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I feel the goal of any post-partum program dealing with metritis/endometritis is to maximize the potential for milk yield by keeping the affected cow at the feed bunk and aiding future reproductive performance by stimulating rapid uterine involution. This involves addressing the metabolic, hormonal and infectious components of the metritis/endometritis complex.

I have taken the approach of trying to identify problem cows as early as possible within the first 10 days post-partum and provide supportive treatment to help maintain increases in dry matter intake and stimulate uterine involution.

In large California dairies where I practice, all fresh cows are locked in stanchions every morning. Dairy personnel observe and take rectal temperatures on all cows daily for the first 10 days post-partum. We use the GLA Electronic Thermometer from GLA Agricultural Electronics, San Luis Obispo, CA. It is reliable and determines rectal temperatures within 15 seconds. Each post-partum cow is classified into a group based on the presence or absence of a fever and whether they appear sick or OK. First calf heifers with rectal temperatures >102.5 and cows with rectal temperatures >103 are determined to have a fever. Cows that have a fever and/or look sick to dairy personnel are treated for a minimum of 3 days according to how they are classified. We have found that cows with early metritis often have a fever prior to appearing clinically sick. Treatment, therefore, is based upon the assumption that post-partum cows with a fever have metritis and sick cows without a fever have metabolic problems such as ketosis and/or hypocalcemia. In either situation, we attempt to treat and support the problem cow to keep her at the feed bunk during the critical first 10 days of the post-partum period.

The treatment regime varies on how the problem cow is classified (See TABLE 1). For example, a cow with a fever and appearing sick would be treated with a drug that stimulates uterine contraction (uterine contractor), an anti-pyretic (fever reducer), a glucose source (energy provider), a calcium source and systemic antibiotics. A cow with a normal temperature and appear-

ing sick would be treated with an energy provider, a corticosteroid (glucose promotor), a calcium source and checked daily for the presence of a displaced abomasum. The specific drugs used by dairy personnel in each category would be determined by the dairyman and myself based on costs, withdrawal times, and labor available to treat cows.

Cows determined to have a fever on one day but appear clinically normal and to be eating, are not treated with systemic antibiotics. They are treated with a uterine contractor, fever reducer, energy provider, and a calcium source. If fever persists on the second day, treatment is repeated for 3 additional days with systemic antibiotics included. Giving these cows a chance to respond to the other components of the treatment protocol without systemic antibiotics has reduced the amount of milk required to be withheld.

Following are specific drugs for each category that I have use in my program. Only one drug from each category is used, when indicated, and all are repeated for at least 3 days, except as noted.

1) Uterine Contractors

A) *ECP* (The Upjohn Co, Kalamazoo, MI) - 4 mg IM is used once (not repeated daily for 3 days) to stimulate uterine involution and sensitize the uterus to natural endogenous oxytocin release. I have been impressed clinically with the 4 mg dose as an aid in uterine involution and have not seen a problem with induced estrus nor increased cystic ovaries. This has been the most clinically effective and commonly used uterine contractor by my clients.

B) *Oxytocin* - 40 mg IM given once daily for 3 days. Used only on dairies that are concerned about using ECP.

2) Fever Reducers

A) *Aspirin boluses* - Most commonly used by my clients due to low cost. Appears to work well helping to reduce fever.

B) *Banamine Injectable* (Schering-Plough, Kenilworth, NJ) - not used as commonly due to greater cost than aspirin boluses. Works well

Table 1. Fresh Cow Program First 10 Days Post-partum
 Temp All Fresh Cows Daily for First 10 Days Post-partum Fever = >103 Cows & >102.5 Heifers

FEVER		NORMAL TEMP	
LOOKS SICK	LOOKS OK	LOOKS SICK	LOOKS OK
TREAT FOR 3 DAYS	TREAT WITH ONE DRUG	TREAT WITH ONE DRUG	
ONE DRUG FROM EACH GROUP	FROM EACH GROUP	FROM EACH GROUP	
1ST DAY	1ST DAY	1ST DAY	RECHECK TEMP DAILY
1) UTERINE CONTRACTORS	1) UTERINE CONTRACTORS	1) ENERGY PROVIDERS	
A) ECP - ONE TX ONLY 4 MG	2) FEVER REDUCERS	A) IV DEXTROSE	
B) OXYTOCIN	3) ENERGY PROVIDERS	B) ORAL PROPYLENE GLYCOL	
	4) CALCIUM SOURCE	C) ORAL PROPYLENE GLYCOL GEL	
2) FEVER REDUCERS	5) NO ANTIBIOTICS !		
A) ASPIRIN BOLUSES		2) GLUCOSE PROMOTERS	
B) BANAMINE INJ		A) AZIUM	
		B) PREDEF	
3) ENERGY PROVIDERS	2ND DAY		
A) IV DEXTROSE	1) IF FEVER PERSISTS	3) CALCIUM SOURCE	
B) ORAL PROPYLENE GLYCOL	A) UTERINE CONTRACTORS	A) ORAL CALCIUM GEL	
C) ORAL PROPYLENE GLYCOL GEL	B) FEVER REDUCERS	B) IV 250 ML CA GLUCONATE	
	C) ENERGY PROVIDERS		
	D) CALCIUM SOURCE	4) CHECK FOR DA	
4) CALCIUM SOURCE	E) SYSTEMIC ANTIBIOTICS		
A) ORAL CALCIUM GEL	REPEAT FOR 3 DAYS		
B) IV 250 ML CA GLUCONATE		2ND & 3RD DAY	
	2) IF NORMAL TEMP	1) IF NORMAL TEMP	
5) SYSTEMIC ANTIBIOTICS	RECHECK FOLLOWING DAY	A) ENERGY PROVIDERS	
A) PENICILLIN		B) GLUCOSE PROMOTERS	
B) POLYFLEX		C) CALCIUM SOURCE	
C) NAXCEL		D) CHECK FOR DA	
		2) IF FEVER PRESENT	
		BEGIN FEVER TREATMENT	
2ND & 3RD DAY - REPEAT TREATMENT			

to reduce fever.

3) *Energy Providers*

- A) IV 50% Dextrose - provides a rapid source of intravenous glucose. Used commonly, inexpensive, but does require more labor to administer.
- B) Oral Propylene Glycol - 8 oz usually given orally.
- C) Oral Propylene Glycol Based Gel Cartridges - used by some dairymen due to the ease of administration. Expense prevents widespread use by my clients.

4) *Calcium Source*

- A) Oral Calcium Gel Cartridges - There has been resistance by some of my clients to use because of the perceived high cost.
- B) 250 ml Calcium Gluconate 23% IV - This treatment was instigated by one of my clients when he was convinced of the need to supply calcium to depressed post-partum cows. Appears to work well as an inexpensive calcium source.

5) *Glucose Promoters* (Corticosteroids)

- A) Azium (Schering-Plough, Kenilworth, NJ)
- B) Predef 2X (The Upjohn Co, Kalamazoo, MI)

6) *Systemic Antibiotics* - only form of antibiotic treatment that I advocate in metritis therapy.

- A) IM Penicillin - Appears clinically to be one of the most effect antibiotics to systemically treat metritis. I usually use an extra-label dose with prolonged withdrawal times.
- B) IM Polyflex (Ft Dogde Labs, Ft. Dodge, Iowa) - Has a relatively short milk withdrawal time of 48 hours.
- C) Naxcel (The Upjohn Co, Kalamazoo, MI) - used by my clients that do not want to withhold milk during antibiotic treatment. Clinically, some of my clients feel it is not as effective as extra-label penicillin.

The incidence of post-partum problems in my practice varies with the extremes of the environmental conditions and the parity of cows calving. Environmentally, we have more problems during the winter with wet, muddy corrals and during the summer in periods of heat stress. First calf heifers have a much higher incidence of metritis than later parity cows. During periods of high incidence of post-partum problems, up to 50% of the first calf heifers and 20% of the cows calving will receive one type of treatment protocol within the first 10 days utilizing this post-partum program. On the average about 20% of the first calf heifers and

10% of the cows calving will receive treatment, about half of which require treatment with systemic antibiotics.

In order to reduce the perceived need by dairy personnel to infuse clinically "normal" cows with obvious uterine discharges after 10 days post-partum, I have a protocol of treatment with ECP and Oxytocin (See TABLE 2). In this situation, cows with obvious uterine discharge and no signs of systemic illness are treated the first day of observation with 4 mg ECP IM and for 3 following days with 40 units of oxytocin IM. This approach has been successful in reducing the number of cows infused and has dramatically reduced the incidence of uterine adhesions in my clients' herds by replacing an infusion gun and pipette with a multi-dose pistol grip syringe.

Table 2. Fresh cow Program After 10 Days Post-partum.

1. OBSERVE ALL FRESH COWS DAILY 10 TO 25 DAYS POST-PARTUM

A. COWS WITH OBVIOUS UTERINE DISCHARGE - NO SIGNS OF ILLNESS

TREAT AS FOLLOWS

1ST DAY

ECP - 4 MG IM

3 FOLLOWING DAYS

OXYTOCIN - 40 UNITS IM

USE PAINTSTIK TO MARK DAYS OF TX ON COW

All "problem" cows that received treatment during the first 10 days post-partum, whether for metritis or a metabolic problem, are followed up with two doses of 25 mg Lutalyse IM (The Upjohn Co, Kalamazoo, MI) given 10 days apart after 25 days in milk. All cows that fail to have a heat recorded after 45 days in milk receive a rectal/vaginal exam during the routine herd checks. The two doses of Lutalyse given to "problem" cows appears to reduce the incidence of pyometras diagnosed during routine rectal examinations.

My clients have become firm believers in these approaches to the post-partum cow since many feel their cows peak higher, lose less body condition after calving, do not require routine uterine infusions, and have less uterine adhesions.

2. COWS 25 TO 35 DAYS POST-PARTUM

A. PROBLEM COW - ANY COW THAT RECEIVED A TX IN 1ST 10 DAYS POST-PARTUM

1. GIVE 25 MG LUTALYSE

2. REPEAT 25 MG LUTALYSE 10 DAYS LATER

3. COWS >45 DAYS POST-PARTUM

A. COWS WITH NO HEAT RECORDED

1. RECTAL/VAGINAL EXAMINATION

Abstract

Bovine papillomavirus type 4 DNA isolated from a skin lesion in a steer

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A lesion on the head of a steer, defined histologically as an epithelial papilloma, yielded DNA which did not hybridise with any of the bovine papillomavirus DNAs usually associated with the formation of skin lesions. DNA from the lesion did hybridise with DNA from bovine papillomavirus 4, even

under stringent conditions, and contained a sequence that could be amplified by polymerase chain reaction with primers specific for that virus. Bovine papillomavirus 4 had previously been isolated only from lesions of the upper alimentary canal.