

Protocol: Identifying Lactating Dairy Cows with Metritis

**Gustavo M. Schuenemann, DVM, MS, PhD
Dairy Extension Veterinarian
Department of Veterinary Preventive Medicine,
College of Veterinary Medicine**



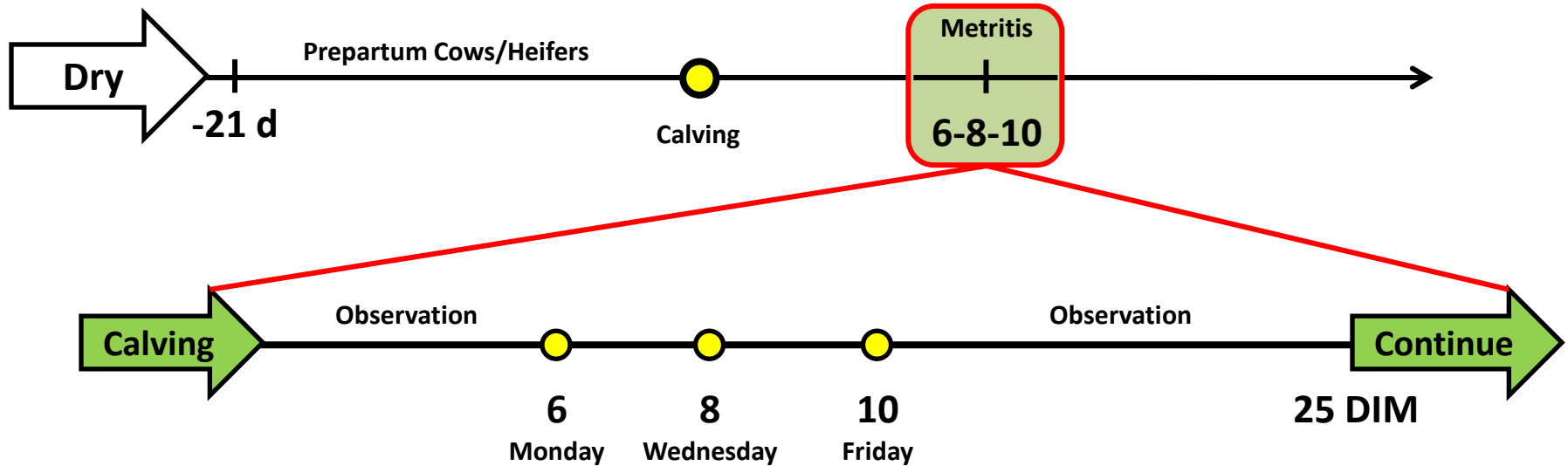
THE OHIO STATE UNIVERSITY

Definition of Metritis

■ Metritis is an inflammation of all layers of the uterus characterized by a foul-smelling, brown-red, watery vaginal discharge and systemic signs of illness (e.g., fever, anorexia, ↓milk yield, dehydration) within the first 21 days in milk (DIM)

(Chenault et al., 2004; JAVMA 224:1634; Drillich et al., 2007; JDS 90:3758; Gilbert, 2008.; DCRC 29; LeBlanc *et al.*, 2002; JDS 85:2223; Dubuc et al., 2011; JDS 94:1325)

Assessment of Metritis



Protocol: Identifying Cows with Metritis

Scores			
0	1	2	3
Rectal Body Temperature (°F)			
100-101.5	101.6-102.4	102.5-103.5	≥103.6
Milk Yield (% drop)			
<5%	8-11%	15-25%	>30%
Udder Fill: YES		Udder Fill: NO	
Dehydration			
0	1	2	≥3
Eating/Rumination Behavior			
0	1	2	3
Vaginal Discharge			
No discharge or mucus brown-red without smell	Muco-purulent, brown- red without smell	Muco-purulent or brown-red watery, foul- smelling	Brown-red watery, foul- smelling

Interpretation of Metritis Scores

Cow ID	DIM at Exam	*RT or Previous Milk Yield Scores (whichever is higher)	Eating/Rum Behavior or Dehydration Scores (whichever is higher)	Vaginal Discharge Scores	Total Score
2222	6	2	2	2	6
3211	8	0	0	0	0
4211	9	3	1	1	5
2210	6	2	0	3	5
2200	11	3	3	3	9
1022	6	1	1	1	3

Interpretation of SCORES:

**Total score for cows with vaginal score of 2 or 3:
 ≤ 3 = Normal, 4 = Watch/Recheck, and ≥ 5 = Sick/Treat**

(*RT = Rectal body temperature)

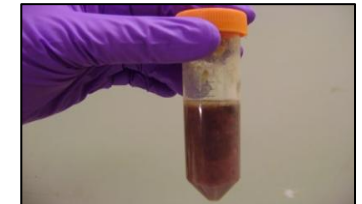
Comments about the total score by cows:

- Cows 2222, 2210, and 2200 had vaginal scores of 2 or 3 with systemic signs of illness (\uparrow RT or \downarrow milk yield) and also were off-feed/dehydrated (total scores of 6, 5, and 9, respectively)
- Cows 3211 and 1022 had a vaginal score of 0 or 1 (considered normal) without systemic signs of illness
- Cows 4211 had an overall score of 5 (vaginal score of 1), but presented systemic signs of illness (score of 3 for RT or milk yield). Check for ketosis and/or other concurrent diseases (e.g., Pneumonia)

Vaginal Discharge Score

Scores = Intravaginal globed hand technique

0	1	2	3
Viscous brown-red or clear without smell	Muco-purulent, brown-red without smell	Muco-purulent or brown-red watery, foul-smelling	Brown-red watery, foul-smelling



Dehydration Scores

Score	% Dehydration	Sunken Eye	Skin Tent (seconds)	Mucosa (inside the vulva)
0	<4	No	Normal	Pink/Shiny/ Moist
1	4 to 6	Slight recession	2 to 3	Pale/Shiny/ Moist
2	7 to 9	Yes	4 to 8	Pale/Tacky/Dry
3	10 to 12	Yes, eyeballs severely sunken into orbits	9 to >12	Pale/Tacky/Dry

Interpretation of SCORES:

0 = Normal; 1 = Watch/Recheck; ≥ 2 = Dehydrated/Treat (fluid therapy)

(Adapted from Constable et al., 1998. J Am Vet Med Assoc. 212:991-996)

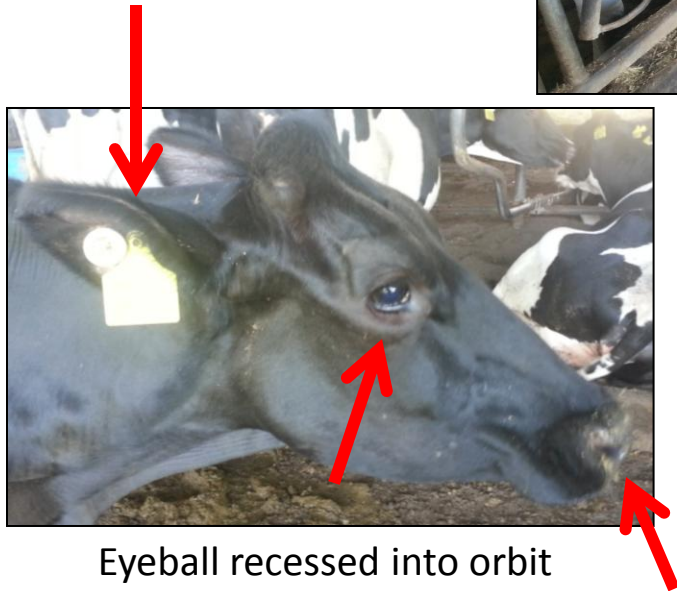
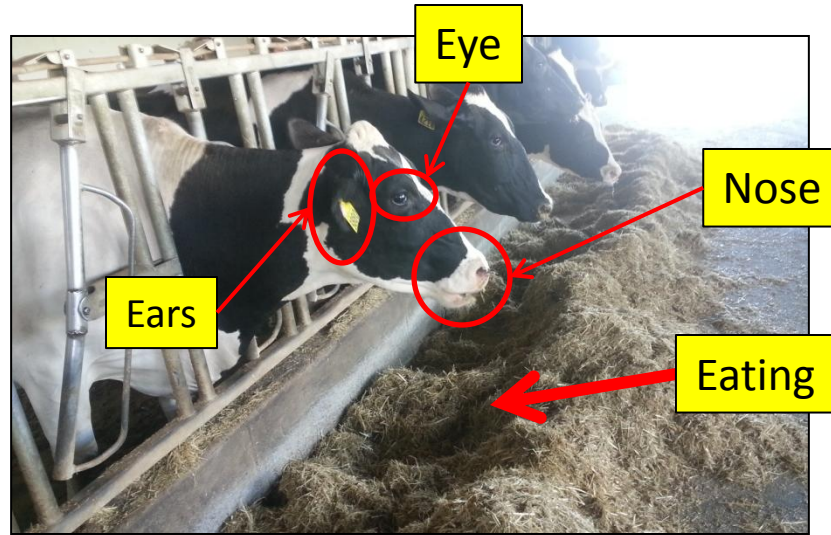
Eating/Rumination Behavior Scores

Score	Eating/Rumination	Rumen Fill/Activity
0	Eating /ruminating normally (chewing cuds)	Yes/Normal (1-2 per min)
1	Eating /ruminating, but head/ears down	Half fill/activity (1 per min)
2	Off-feed, depressed, head down and drop ears (cold)	No/↓activity (at least 1 in 5 min)
3	Off-feed, critically depressed (lying), head in lateral position, drop ears (cold)	No/No (none in 5 min)

Interpretation of SCORES:

0 = Normal; 1 = Watch/Recheck; ≥2 = Sick

What to Look For?



Eyeball retracted into orbit
(dehydration score = 2)



Shiny and moist nose
(dehydration score = 0)



Ruminating (chewing cuds)
(behavior score = 0)

Treatment Guidelines

Drug ¹	Animals	Disease Condition	Administration Route	Dose	Times	Milk Withdrawal	Meat Withdrawal	Warning & Observation
Ceftiofur hydrochloride	Lactating cows	Metritis	Sub-Q or IM (15 mL max per injection site)	2 mL/100 lbs of Body Weight (2.2 mg/kg BW)	Once per day for 5 days	0 day	4 days following the last dose	Do not use in calves to be processed for veal
Flunixin meglumine	Lactating cows	Pyrexia and inflammation	IV (only)	1 cc/100 lbs (50 mg/mL)	One at the time of 1 st antibiotic administration	36 hours	4 days	Not for dry cow use. Do not use in calves to be processed for veal
Cows with metritis and Dehydrated								
YMCP (Drench)	Lactating cows	Dehydration	Oral (esophageal tube)	1 lbs of powder in 5 gallons of warm water	Once per day for 2 days	0 day	0 day	Do not drench downer cows or with swallowing problems
Hypertonic Saline	Lactating cows	Dehydrated	IV	1-2 Liters	Once at diagnosis	0 day	0 day	Offer at least 5 gallons of water (drench) within 10 minutes of IV
Cows with metritis and Ketosis								
Propylene Glycol	Lactating cows	Ketosis (>1.2 mmol/L)	Oral	300 cc per animal	Once per day for 5 days	0 day	0 day	Until BHBA is ≤1.2 mmol/L

(Chenault et al., 2004; JAVMA 224:1634; Drillich et al., 2007; JDS 90:3758; Gilbert, 2008.; DCRC 29; LeBlanc *et al.*, 2002; JDS 85:2223; Dubuc et al., 2011; JDS 94:1325)

¹Store at controlled room temperature 20° to 25°C (68° to 77°F). Protect from freezing and shake well before using. Contents should be used within 42 days after the first dose is removed. Please inform immediately the veterinary of record if any drug was used in an extra-label manner (changes in dose, frequency, and route of administration) because this may increase the risk for residues in meat/milk.

Negative Energy Balance and Ketosis

Test	Reference Value ¹	Alarm Level*	Group of Animals at Risk	Associated Diseases
BHBA	<u>Fresh:</u> -Blood: ≥ 1.2 mmol/L -Milk: ≥ 100 μ mol/L	$\geq 15\%$	Fresh cows 7-20 DIM	-Ketosis -Hypocalcemia (clinical or subclinical)
NEFA	<u>Pre-partum:</u> ≥ 0.40 mEq/L	$\geq 15\%$	Pre-partum cows 2-14 days prior to expected calving date	-DAs -RP and Metritis
	<u>Fresh:</u> ≥ 0.70 mEq/L	$\geq 15\%$	Fresh cows 5-20 DIM	-Fatty liver

¹Adaptado de Oetzel, 2008; Ospina et al., 2010; Denis-Robichaud et al., 2011; McArt et al., 2012)

*Alarm Level: $\geq 15\%$ of 25 animals sampled (3-4 animals with values > than the reference).

BHBA in Blood (lactating dairy cows 7-20 DIM):

Normal: ≤ 1.1 mM/L

Subclinical Ketosis: ≥ 1.2 - 2.9 mM/L

Clinical Ketosis: > 2.9 mM/L