

# Assessing Potential Risks For Mastitis If Antibiotic Use At Dry-Off Time Is Reduced

## GUIDANCE DOCUMENT



Dairy Farmers  
of Ontario

ANTIMICROBIAL STEWARDSHIP  
& SELECTIVE DRY COW THERAPY PROJECT

IN PARTNERSHIP WITH:



WITH FUNDING FROM:



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**Introduction:** This document provides topics for veterinarians to discuss with herd owners or managers who are interested in implementing selective antibiotic dry cow therapy (SDCT), and/or improving mastitis prevention more generally.

**Methods:** The information in this document is to assist in assessing herd management and mastitis outcomes in detail and in as standardized a manner as possible. Areas of management can be “scored” as being of low, moderate or high concern with results recorded in the accompanying Summary Form. This document and the Summary are designed to be utilized by a veterinarian with their client on the farm, as part of a “walk about” discussion. While it is useful to score herd status as objectively as possible for monitoring over time, the main purpose of the document is to guide a comprehensive discussion between vet and client to ensure that all important areas of management for mastitis prevention around the dry period are covered and the results of the discussion are captured for current and future decision making. The focus of the document is on the potential risks associated with a change from blanket to SDCT. The larger goal of the guided discussion is to identify opportunities to improve overall mastitis prevention, whether SDCT is adopted or not.

**Initial Assessment:** In general the following aspects of herd management can be used to determine which herds are good candidates for successful adoption of SDCT. Failing to be in complete compliance with the conditions listed below however, does not preclude using the document for discussion as the overall goal is to improve mastitis prevention so that SDCT can be adopted sometime in the future.

Herd management and herd mastitis status can be assessed initially with the following questions:

1. Does this herd maintain the bulk tank SCC consistently below 250,000 cells/ml?
2. Is the level of mastitis due to Staph aureus known and low?
3. Is this herd free of Strep Ag mastitis?
4. Have very few cows have been introduced in the last 5 years and is that continuing to be the herd policy?
5. Is the herd average dry period length within 55 +/- 10 days?
6. Is there an adequate protocol for identifying and eliminating incurable cases of mastitis (either quarters or cows?)
7. Will the herd staff be able to adhere consistently to a dry cow treatment protocol?
8. Is there a protocol for identifying and recording clinical and subclinical mastitis, lactating cow mastitis treatment and dry cow treatment?
9. Are the mastitis records reviewed monthly by herd staff and the herd veterinarian?

**Making Recommendations:** When the assessment and discussion has been completed recommendations can be made to help improve mastitis prevention. These recommendations should be specific and clear for the producer to follow. An agreed on timeline for completion should be established. Recommendations can be followed up on at subsequent herd visits. Recommendations may include selective antibiotic use.

# GUIDANCE DOCUMENT

This document is designed to assess the potential risks for increased mastitis should antibiotic use at dry-off time be reduced. The following document provides the basis for discussion by reviewing the current herd and mastitis status and the overall mastitis prevention program, as assessed by the producer with their herd veterinarian, through the stages of the cow's life cycle.

Outcomes of questions below are scored as either:

<b>Low</b>	The area or management procedure is of low concern for mastitis increase
<b>Moderate</b>	There is moderate concern that without improvement mastitis may increase
<b>High</b>	The area or management procedure is highly concerning and needs improvement for optimal mastitis prevention. Discussion and recommendations made following this assessment should initially focus on improvements to areas rated as being of "high" concern

## RISK #1: Will too many mastitis infections from the previous lactation go untreated at dry-off time if antibiotic use is reduced?

### 1.1 Is it likely that mastitis is prevalent at dry-off time in this herd?

**Action:** Review existing culture and PCR test data to determine the pathogens likely prevalent in this herd.

<b>Low</b>	Sufficient culture/PCR data is recorded to determine Strep ag is not present. <i>Staph aureus</i> and non-ag Streps are of low prevalence at dry off.
<b>Moderate</b>	Some data, not formally recorded, some pathogens found present.
<b>High</b>	No culture or PCR data, contagious pathogens believed to be present. With no data to assess it is likely that there is little knowledge of the actual mastitis pathogens commonly found in cases in this herd.

### 1.2 Have new cows or heifers been introduced to this herd?

**Action:** Review records to identify the approximate number of cows/heifers milking in this herd that were added (born elsewhere).

<b>Low</b>	No cattle added.
<b>Moderate</b>	A few added. Testing done for mastitis on entry and results are negative.
<b>High</b>	Many added. No testing done on entry. No milking order imposed for new cows. The risk of repeatedly introducing infected cows leading to more mastitis is high.

## **RISK #2: Are steps taken to reduce the risk of new mastitis infections starting in the early dry period?**

### **2.1 How is milk production lowered prior to dry-off?**

**Action:** Review the steps used to reduce milk production prior to dry-off. Examine records to determine milk production on last test date before dry off.

<b>Low</b>	There is a standard protocol for reducing milk production that starts 2-7 days before dry date and results in decreasing milk production to less than 18 kgs/day.
<b>Moderate</b>	There is a protocol but the criteria used can vary. The protocol is not uniformly applied. More than 50% of cows at dry-off have greater than 18 kgs of milk per day on last test before dry-off.
<b>High</b>	Cows are dried off with less than 2 days preparation to decrease milk production. More than 50% of cows dry-off with greater than 25 kgs of milk per day on last test before dry-off.

### **2.2 How are teats protected at dry-off time?**

**Action:** Review the protocols used on this farm for application of dry cow antibiotic and/or teat seal application. Compare this protocol to the Best Management Practice Factsheet.

<b>Low</b>	Teat seal and/or antibiotic is applied to all cows using a protocol that involves cleaning and disinfection of the teat ends prior to and between tube insertions.
<b>Moderate</b>	Teat seal and/or antibiotic is used for some cows, but cow selection is not consistent and the protocol for selection is not fully adequate. Protocol for application is not fully adequate.
<b>High</b>	No use of teat seal or antibiotic at dry-off OR these are used but the protocol for application is inadequate.

### **2.3 Is leaking occurring after dry-off?**

**Action:** In the dry-cow housing area, review how the producer observes cows in the 3 days after dry-off.

<b>Low</b>	Cows are observed daily post dry-off around milking time for at least 3 days and no leaking occurs.
<b>Moderate</b>	Cows are occasionally observed; some leaking has occurred historically.
<b>High</b>	Cows not observed. Leaking may be suspected to be occurring based on level of milk production at dry-off.

## 2.4 Does dry cow housing and bedding keep dry cows clean and dry?

**Action:** Walk the early dry period cow housing area and evaluate cows for cleanliness. Measure the square footage of the bedded area and count the cows present. Calculate the area of the bedded area available to each cow.

<b>Low</b>	Bedding is clean, dry and plentiful. At least 120 sq. ft. (11 sq. metres) of bedded area is provided per cow. Over 90% of cows have clean legs, udders and flanks.
<b>Moderate</b>	Bedding is mainly clean and dry. Approximately 80–120 sq. ft. of bedded area is provided per cow. 75% of cows have clean legs, udders and flanks.
<b>High</b>	Bedding amount is insufficient and mainly dirty. About 50% of cows have clean legs and flanks.

### **RISK #3: Are steps taken to reduce the risk of new mastitis infections starting in the late dry period or “close-up” group?**

## 3.1 Does dry cow housing and bedding keep dry cows clean and dry?

**Action:** Walk the late dry period cow housing area and evaluate cows for cleanliness. Measure the square footage of the bedded area and count the cows present. Calculate the area of the bedded area available to each cow.

<b>Low</b>	Bedding is clean, dry and plentiful. At least 120 sq. ft. (11 sq. metres) of bedded area is provided per cow. Over 90% of cows have clean legs, udders and flanks.
<b>Moderate</b>	Bedding is mainly clean and dry. Approximately 80 – 120 sq. ft. of bedded area is provided per cow. 75 % of cows have clean legs, udders and flanks.
<b>High</b>	Bedding amount is insufficient and mainly dirty. About 50% of cows have clean legs and flanks.

## 3.2 Is udder edema and leaking minimal?

**Action:** Assess cows close to calving for udder edema and leaking.

<b>Low</b>	Minimal udder edema is present in cows and heifers. Leaking is rarely observed prior to calving.
<b>Moderate</b>	Some udder edema occurs in heifers but not in cows. Leaking occurs but is infrequent. There is a protocol for dealing with cows with udder edema and leaking. Preventive strategies are being implemented.
<b>High</b>	Udder edema and leaking occurs. There is no protocol for dealing with these cows or heifers.

### 3.3 Is there a mastitis vaccination program?

**Action:** If mastitis vaccination is used: Review the timing of mastitis vaccination in comparison to product label recommendations. Ensure the program takes into account the variation in dry period length for cows that may occur in the herd. Vaccinations should be recorded and records should be readily available for review. Review herd records (or clinic sales if no on-farm records) for evidence the program is fully implemented.

If mastitis vaccination is not used then skip this question and record “no vaccination used currently” on the Summary sheet. Ultimately a recommendation could be made to implement a vaccination program if the veterinarian feels it is warranted based on the pathogens identified and the timing of the occurrence of clinical mastitis cases in the herd.

<b>Low</b>	Cows are vaccinated according to label recommendations. More than 90% of cows receive the full mastitis vaccination series each lactation.
<b>Moderate</b>	Cows are vaccinated according to label recommendations but only 75% of cows receive the full vaccination series each lactation.
<b>High</b>	Vaccines are used but the label recommendations are not followed. Fewer than 75% of cows receive the full vaccination series.

### **RISK #4: Are steps taken to reduce the risk of new mastitis infections starting during the calving period? (i.e. maternity pen or calving + or - one day)**

**Action:** Visit the maternity pen/calving area. Ask what proportion of cows calved in the last 6 months have calved somewhere other than in the designated calving area.

#### 4.1 Where do cows calve?

<b>Low</b>	Each cow calves alone in a dedicated maternity/calving pen. The pen is of adequate size and has sufficient bedding to keep calving cow's udders clean and dry.
<b>Moderate</b>	A maternity/calving pen is present but not all cows calve there.
<b>High</b>	Cows calve in a group maternity pen.

#### 4.2 How soon are calves removed from contact with the cow after calving?

<b>Low</b>	More than 90% of calves are removed within 30 minutes of birth before sucking.
<b>Moderate</b>	More than 90% are removed within 4 hours of birth, some sucking occurs.
<b>High</b>	More than 90% of calves remain with the cow at least 6 hours.

#### 4.3 Where are the cows housed after calving?

<b>Low</b>	Cows are always housed in an area that is clean and dry; either very low density or alone.
<b>Moderate</b>	Cows housed in moderately dirty housing (pen or fresh cow group), with at least one stall per cow.
<b>High</b>	Housed in dirty loose or tie-stall housing, or in a free-stall area with less than one stall per cow.

#### 4.4 How are fresh cows milked?

**Action:** Do a visual check on equipment used for milking fresh cows.

<b>Low</b>	Fresh cows are milked with a separate unit, a unit not used for milking mastitic or treated cows, which is cleaned after each milking time. A full milking prep (wash/dry or pre-dip and dry, post-milking teat dip) is used at each milking.
<b>Moderate</b>	Separate unit used but not washed after each milking time use.
<b>High</b>	No set protocol for milking fresh cows. Some may be milked with a unit that is also used for treated or mastitic cows (with or without disinfection in between).

#### 4.5 How is mastitis detected in fresh cows?

**Action:** Ask for a demonstration of any equipment used (such as CMT).

<b>Low</b>	Cows are stripped at first milking and milk is visually examined. Milk is checked with CMT for colour, clots and gel formation. Results are recorded.
<b>Moderate</b>	Cows are stripped and milk is visually checked for clots but nothing additional.
<b>High</b>	No special attempt is made to check milk from fresh cows for signs of mastitis.

#### 4.6 How is teat sealant handled in fresh cows?

<b>Low</b>	Teat sealant is present in all cows at the time of first milking and cows are hand-stripped prior to milking until all sealant is removed. Cows are examined at multiple subsequent milking times for evidence of sealant prior to milking.
<b>Moderate</b>	Most (90%) cows have sealant present at the time of first milking and all is removed. Milk is re-examined at least one more time to ensure sealant is no longer present.
<b>High</b>	Less than 75% of cows have sealant present at first milking. No special steps are taken to remove sealant. No future re-examination of individual cow milk for sealant occurs.

## **RISK #5: Are there protocols for detecting, monitoring and recording mastitis?**

**Action:** Ask to see the mastitis records for the herd. For this section, record the answers to the questions directly on the summary sheet.

Permanent mastitis records are necessary for withhold times but also for determining mastitis patterns. They may be kept in a variety of forms such as electronic, paper, herd book, proAction sheet etc. Check to ensure adequate data is recorded ie date, cow id, quarter, any test results, any treatments given. Records should include dry cow antibiotic treatments if used.

If records are inadequate, recommendations should include the specific correction needed.

Mastitis detection tests fall into two categories and both should be understood and used on each operation:

**Subclinical mastitis:** Cannot be detected by visual changes in the milk, udder or cow. Therefore some form of testing must be utilized to ensure mastitis cases can be detected. Recommended tests for subclinical mastitis tests include: SCCs (Lactanet individual cow SCCs, PortaSCC, OCC, etc.). Maybe CMT depending on how often it is used, when it is used and if it is routinely done rather than triggered by suspicion of clinical mastitis.

**Clinical mastitis:** Causes visible changes in milk, udder or systemic illness in the cow. In conventional milking observation/visual is the most likely test to be used, but successful use for detection relies on stripping of cows prior to milking.

### **5.1 How are permanent mastitis records maintained?**

### **5.2 How is subclinical mastitis detected?**

### **5.3 How is clinical mastitis detected?**

### **5.4 How are mastitis pathogens identified?**