



AABP GUIDELINES FOR PRACTICING VETERINARIANS PROVIDING MILK QUALITY AND MASTITIS CONTROL PROGRAM SERVICES TO DAIRY CATTLE

GUIDELINES FOR THE EXPERIENCED MILK QUALITY SERVICE PROVIDER

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A. MONITORING UDDER HEALTH

1. SCREENING TEST INFORMATION

a. Body of Knowledge Necessary

- Understand microbiology tests reported by milk processors (total bacteria count measurements such as standard plate count, lab pasteurized count, coliform, preliminary incubation count).
Knowledge of how to perform and interpret milk microbiological testing.
Understand and interpret test results and the differences between traditional and molecular test results.
Understand how to calculate and interpret herd-level SCC KPIs to assess sub-clinical mastitis.

b. Capabilities Needed

- Access to a milk quality laboratory
Use herd level SCC KPIs to evaluate herd infection dynamics and make appropriate recommendations.

2. TEAM APPROACH TO A COMPLETE MILK QUALITY PROGRAM

a. Body of Knowledge Necessary

- Ability to lead team in goal setting, monitoring and realization.

b. Capabilities Needed

- Training/interest in leadership and protocol development.
Knowledge of industry standards, milk markets and individual farm goals.



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### **3. STATE AND FEDERAL MILK QUALITY REGULATIONS**

#### **a. Body of Knowledge Necessary**

- Advanced understanding of PMO as it relates to monitoring of milk quality.

#### **b. Capabilities Needed**

- Advocacy for adjusting processor, local, state and federal regulations when needed.

### **4. INDIVIDUAL FARM GOAL SETTING**

#### **a. Body of Knowledge Necessary**

- Review maintenance of farm specific key performance indicators (KPIs) related to treatment and management of clinical and subclinical mastitis.
- Know how mastitis goals fit into overall farm profitability as a means to focus farm attention on areas that will lead to the greatest return on investment of time and money in instituting changes.

#### **b. Capabilities Needed**

- Training and ability to assist individual farms in the goal setting process.

## **B. MASTITIS DETECTION AND DIAGNOSIS**

#### **a. Body of Knowledge Necessary**

- Understand differences among pathogens in case presentation including differences in the appearance of inflammation, expectations for resolution of infection and appearance, and variability of clinical signs.
- Understanding of how to use herd management software to automate culture result entry and treatment protocol assignment.
- Understand laboratory procedures used to accurately diagnose mastitis pathogens based on recommendations described in NMC Laboratory Procedures.

- Understand strengths and weaknesses and the applicability of diagnostic testing from individual cows and bulk tank milk including both classical microbiological and advanced tests such as MALDI-TOF and PCR.

#### **b. Capabilities Needed**

- Ability to perform basic microbiological laboratory techniques according to NMC procedures if there is not a nearby milk quality laboratory accessible.
  - Microscopy for advanced microbiological techniques
  - Interpretation of MALDI-TOF and PCR data
  - Perform oversight of on-farm culture programs

## **C. TREATMENT OF MASTITIS**

### **1. DRY COWS**

#### **a. Body of Knowledge Necessary**

- Knowledge of common pathogens commonly encountered in the dry period.
- Pathogen-specific knowledge of the efficacy of antibiotics approved for treatment of dry cows and expected spontaneous cure rates.
- Knowledge of comparative strengths and weaknesses of internal and external teat sealants when used to prevent NIMI.
- Understand the benefits and risks associated with blanket (BDCT) and selective (SDCT) dry cow therapy programs.
- Knowledge of efficacy and economic outcomes for various methods of SDCT.

#### **b. Capabilities Needed**

- Utilize herd management software (or other methods) to create lists indicating



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when to dry cows off and to ensure appropriate meat and milk withholding times after antibiotic therapy.

- Ability to train farm workers to aseptically administer internal or external teat sealants and proper removal of internal sealants.
- Ability to train farm workers to aseptically administer intramammary antibiotics using the partial insertion method.
- Evaluate farm and cow criteria to make recommendations for BDCT or SDCT.
  - When SDCT is used, provide recommendations for selection of cows that do not require antibiotic treatment.
- Monitor adequacy of dry cow management by review of appropriate metrics for udder health.

## 2. LACTATING COWS

### a. Body of Knowledge Necessary

- Understanding of the data surrounding the effectiveness of labelled intramammary antibiotics against common mastitis pathogens.
- Knowledge of culling criteria for cows that develop chronic mastitis.
- Understand metrics used to assess treatment outcomes and how etiology influences them.
  - Clinical cures
  - Bacteriological cures
  - Culling
  - Somatic cell count recovery
- Understand herd-specific management protocols for cows with clinical and subclinical mastitis.
- Understand cow-level risk factors that influence prognosis.

- Understand types of approved treatment protocols.
- Understand economic considerations of treatment decisions.

### b. Capabilities Needed

- Be able to use herd management software to help guide treatment decisions.
- Develop farm-specific protocols for management of cows with subclinical mastitis.
- Be able to train farm workers in techniques needed to deliver treatment protocols.
- Prepare treatment or intervention protocols for all severities of clinical mastitis.
- Monitor compliance with treatment protocols for mastitis.
- Advise clients on use and evaluation of selective treatment protocols for non-severe clinical mastitis.
- Develop farm-specific protocols for non-treatment interventions for cows with non-severe clinical mastitis, when appropriate.
- Provide basic economic analysis of treatment decisions for subclinical and clinical mastitis.
- Review individual cow histories, including somatic cell count and treatment records when available as part of the decision-making process when treating animals.
- Develop farm-specific protocols for management of cows with less than four functional quarters, when appropriate.
- Develop farm-specific protocols for management of cows with subclinical mastitis, including cows potentially infected with contagious organisms.
- Educate dairy producers about important differences in treatment and control pro-



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grams for clinical and subclinical mastitis caused by different pathogens.

- Develop farm-specific treatment protocols based on severity, including pharmaceutical choices, non-antimicrobial treatment options, dose, frequency, duration of prescribed drugs, and evaluation of outcomes.
- Review the efficacy of therapeutic and prevention plan on the dairy.

### **3. RECORD KEEPING AND PREVENTION OF ANTIBIOTIC RESIDUES**

- Be knowledgeable of on-farm and off-farm residue screening tests.
- Ability to set up appropriate recording codes in various dairy management software.

## **D. PREVENTION OF MASTITIS**

### **1. THE COW AND HER ENVIRONMENT**

#### **a. Body of Knowledge Necessary**

- Knowledge of used bedding materials, type and associated benefits/risks.
- Recommend best management practices for bedding frequency and management (inclusive of organic and inorganic materials, in both free stalls and pack barns, as well as compost packs.
- Knowledge of biosecurity and biocontainment practices that impact milk quality, including testing type/frequency, and individual cow, or bulk tank from herd of origin.
- Create a vaccine protocol for the dairy to include mastitis vaccines, based on core recommendations (*E. coli*) and risk (culture-based) for other pathogens.
- Understand the role of stray voltage on cow health both in the milking parlor and barn.
- Understand genetic and environmental

risk factors for mastitis.

- Understand herd-specific epidemiology of mastitis pathogens.

#### **b. Capabilities Needed**

- Have an SOP for submitting bedding samples to a referral laboratory.
- Make biosecurity and biocontainment recommendations to control/reduce the spread of contagious mastitis pathogens.
- Know local resources available to survey for presumptive evidence of stray voltage.

### **2. THE MILKING ROUTINE**

#### **a. Body of Knowledge Necessary**

- Understand what a proper milking routine is—the system of prepping multiple cows creating consistency in timing for each step in the routine.
- Define under milking and over milking.
- Role of proper unit alignment.
- Know active ingredients, concentrations, advantages, disadvantages, storage requirements and uses of teat dips.

#### **b. Capabilities Needed**

- Ability to perform a parlor audit of the milking routine.
- Ability to assess cleanliness of teats.

### **3. THE MILKING EQUIPMENT**

#### **a. Body of Knowledge Necessary**

- Have a working understanding of the NMC procedures for evaluating vacuum levels and airflow in milking systems.
- Describe the key differences in the local milk path between high-line and low-line milking systems.



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- Understand key characteristics of milking inflation design.
  - Understand the different types of inflations and how to calculate the intervals for replacement.
  - Understand the role of liner slips and impacts.
  - Understand regular milking equipment maintenance needs to ensure proper milking system performance.
  - Understand proper application and removal of milking units.
  - Understand Automatic Take-Off (ATO) settings.
  - Understand Parlor Performance software reports for conventional milking parlors
  - Understand software reports available in automatic milking systems.
  - Understand the processes used for cleaning and sanitization of the milking system.
- b. Capabilities Needed**
- Ability to discuss with milking equipment dealers and service technicians how a milking system operates and the basic principles involved in the machine harvesting of milk.
  - Ability to operate milking machine testing equipment.
    - Vacuum gauge
    - Vacuum recording devices
    - Air flow meter
  - Record and report system vacuum and airflow measurements consistent with NMC procedures.
  - Measure pulsator operation and assess pulsation rate and ratios per NMC guidelines.
  - Determine with strip yield testing if cows are evenly and completely milked out at the time of automatic detachment.