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Important Managemental Practices to Reduce occurrence of Mastitis in farms

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Uninterrupted supply of high-quality milk is an important goal of every dairy farm. Poor milk quality results in milk with reduced shelf life and poor dairy products. Mastitis can be a significant contributor to reduced milk quality. In this disease there is an inflammation of the udder that affects a high proportion of dairy cows throughout the world. These pathogens invade the udder, multiply there, and produce harmful substances that result in inflammation, reduced milk production, and altered milk quality. Because mastitis can be caused by many different pathogens, control is extremely difficult, and economic losses due to mastitis can be immense.

Clinical mastitis is characterized by abnormal milk and/or visible abnormalities of the udder such as hot and swollen quarters. However, subclinical mastitis (often referred to as hidden mastitis), the most common form of mastitis, is not readily apparent because there are no visible signs of the disease.The most notable changes in milk composition associated with mastitis are decreased concentrations of fat, lactose, casein, and calcium; and increased concentrations of albumin, sodium, and chloride. Concentrations of lipases, proteases, oxidases, plasmin, and plasminogen increase, which may adversely influence milk stability, milk flavor, and processed dairy products. In addition, factors not normally found in milk such as inflammatory mediators and bacterial enterotoxins and endotoxins have been detected in milk from cows with mastitis.

Controlling Mastitis

Prevention and Control of Mastitis:

Mastitis is a difficult disease to control because many different bacteria are capable of infecting the udder and producing the disease. Microorganisms that most frequently cause mastitis can be divided into two broad categories: (1) contagious pathogens, which are spread from cow to cow primarily during the milking process; and (2)

environmental pathogens, which are found throughout the habitat of dairy cows.**Contagious mastitis pathogens** spread from infected cows to uninfected cows primarily at milking. Contagious mastitis is caused primarily by *Staphylococcus aureus* and *Streptococcus agalactiae*. *Mycoplasma bovis* and other Mycoplasma species have been increasingly reported as important contagious mastitis pathogens. **Environmental mastitis** is caused primarily by environmental streptococci including *Streptococcus uberis*, *Streptococcus dysgalactiae* subsp. *dysgalactiae*, and coliforms including *Escherichia coli* and *Klebsiella* species. The primary source of environmental mastitis pathogens is the environment of the cow. Infections generally occur between milkings and during the milking process.

Current Methods of Mastitis Prevention and Control:

Since pathogenic bacteria gain entrance into the mammary gland through the teat canal, the greater the bacterial load at the teat end, the greater the probability of an infection occurring. Therefore it is very the important to maintain a clean, dry environment and udder hygiene at milking time. Any procedure that reduces the number of bacteria at the teat end is likely to reduce the chances of infection. Proper milking hygiene and good milking practices consist of the following elements:

(1) Milk in a clean environment.
(2) Keeping an eye on udder for signs of clinical mastitis.
(3) Minimize use of water during milking and wash teats with warm sanitizing solution, if necessary.
(4) Use premilking teat disinfections.
(5) Dry teats thoroughly 30 to 45 seconds after premilking teat disinfectant application.
(6) Start milking within one minute after cleaning.
(7) apply postmilking teat disinfectant shortly after milking.

Premilking Teat Disinfection: Premilking teat disinfection is toremove environmental pathogens that may have been transmitted to the teat at some point after the last milking. Handler should make sure that the premilking teat disinfectant is removed from teats before milking to prevent contamination of milk.

Postmilking Teat Disinfection: This practice destroys mastitis pathogens on teats after milking. In general, effective postmilking teat disinfectants reduce the new infection.

Antibiotic Therapy of Clinical Mastitis: Despite mastitis control measures such as pre- and postmilking teat disinfection and good hygiene at milking time, mastitis does occur and often requires antibiotic treatment. Antibiotic therapy of clinical mastitis involves:

(1) Detection of the infected quarter.
(2) Swift initiation of treatment.
(3) Administration of recommended treatments.
(4) Maintaining treatment records for future management and treatments.
(5) Making sure the milk is free of antibiotic residues before adding to the bulk tank.

Efficacy of mastitis therapy is extremely low for chronic *Staph. aureus* infections; ß-lactamase production may be partly responsible for the low cure rate. It is still controversial whether to treat or not treat cows with coliform mastitis. Clinical signs of coliform mastitis are mainly due to the effects from endotoxin. When treating cows with clinical or subclinical mastitis, the treatment MUST be carried out under the supervision of the herd veterinarian. Furthermore, milk and meat for human consumption from antibiotic-treated cows must be free of drug residues.

Dry Cow Antibiotic Therapy:

The importance of the dry period in the control of mastitis in dairy cows has been knownsince long time. The rate of new infection during the first 21 days of the dry period was over six times higher than the rate observed during the previous lactation. Subsequent studies have also shown that udders are highly susceptible to new intra mammary infection near calving. Many intra mammary infection that occur at this time persist throughout the dry period and are often associated with clinical mastitis after calving. Thus, the early dry period was identified as an extremely important time for the control of mastitis in dairy cows.

It is advised that all quarters of all cows be infused with antibiotics approved for use in dry cows following the last milking of lactation. The objectives of dry cow therapy are twofold: (1) to eliminate infections present during late lactation, and (2) to prevent new infections during the early dry period when mammary glands are highly susceptible to new infection.

Heifer Mastitis:

Prepartum intramammary antibiotic infusion of heifer mammary glands was shown to be an effective procedure for eliminating many infections in heifers during late gestation and for reducing the prevalence of mastitis in heifers both during early lactation and throughout lactation. Data are equivocal regarding the influence of antibiotic treatment of heifers before or near calving on milk production in the subsequent lactation. Some studies reported that prepartum antibiotic-treated heifers produced significantly more milk than control heifers.

Internal Teat Sealants:

Use of internal teat sealants is a relatively new concept, and much of the early data came from studies conducted in New Zealand. Results of those studies showed that internal teat sealants were effective in preventing new infections during the dry period, thus improving milk quality in early lactation.

Culling of Chronically Infected Cows:

Culling is an extremely important component of every mastitis control program. Cows not responding favorably to treatment that continue to flare up with clinical mastitis should be culled.

Summary

Production of maximum quantities of high-quality milk is an important goal of every dairy operation. On the other hand, poor milk quality affects all segments of the dairy industry, ultimately resulting in milk with decreased manufacturing properties and dairy products with reduced shelf life. Effective milking-time hygiene, proper milking machine function, pre- and postmilking teat disinfection, lactation therapy, antibiotic dry cow therapy, and culling of chronically infected cows are time-tested management strategies for controlling mastitis and are used extensively throughout the world. Use of effective mastitis control strategies will help dairy producers achieve these important goals.

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