



Handling Mastitis Problem Herds

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A herd whose DHI somatic cell count (SCC) averages more than 3.0, has a bulk tank somatic cell count (SCC) above 200,000, or treats more than 2 to 5% of the herd on any given day has a mastitis problem. When the DHI SCC averages between 3.0 and 4.0, or bulk-tank counts are between 200,000 and 400,000, the problem is one of high levels of subclinical mastitis and increased number of cows with high cell counts (DHI scores 6 and above). Such herds are losing money through reduced milk yield per cow, greater culling due to mastitis or low milk production associated with mastitis, greater amounts of discarded milk from treated cows and greater potential to ship antibiotic-contaminated milk, as well as increased labor and headaches to deal with the problem, and greater costs for herd replacements.

The question is, "What caused the problem and what must be done to correct the situation"?

Herd Testing

Use the DHI somatic cell count program to identify cows with elevated SCC scores. Cows with scores of 5 and above should be considered as infected. Conduct the California Mastitis Test (CMT) on those cows to determine which quarters are positive. Keep a record. If the herd is not enrolled in the DHI SCC program, conduct CMT's on every cow in the herd. Examine teat ends for abnormalities. Palpate udders to determine extent of scar tissue development. Cows with extensive development should be culled. Collect aseptic milk samples from these positive cows and submit them to a state or veterinarian's laboratory for bacterial identification and sensitivity testing. Culture at least 15 cows with chronically elevated SCC and also those cows showing clinical mastitis. The sensitivity testing provides your veterinarian with resistance patterns and indicates which treatments may not be appropriate or successful. The type of bacteria gives some indication of source of infection (Table 1). Cows infected with Staphylococcus aureus may not respond favorably to treatment, especially if infected in two or more quarters. You now have identified cows that you should consider culling. Also, these cows should be isolated from the good cows in the herd and milked last, especially if they have been treated with an antibiotic. Treated cows should be milked last to avoid antibiotic contamination of the bulk tank, even when a special milker unit is used. Overflows into the bulk tank occur too frequently. (See Dairy Guidelines 404-228 and 404-403).

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Milking Procedures

With most infections, including streptococci, staphylococci, and coliforms, review milking practices. Use the strip cup to detect new clinical cases of mastitis (e.g., watery milk, off color, or flakes). This may indicate the development of coliform mastitis where it may be desirable to check the cow's temperature as well as consider treatment. Wash the teats clean of dirt and manure. Avoid using very much water. Use only a wash hose, individual paper towel, or individual cloth towels. Common rags and sponges are not acceptable. A substitute for washing is pre-dipping, which almost eliminates the problem of excessive water usage and improper drying. Dry teats thoroughly after washing or pre-dipping. Attach milking units within one minute after preparation begins. Clipped udders are easier to clean and dry and result in higher quality milk.

Table 1. Major Mastitis-causing Pathogens and Sources of Infection

Pathogen	Source and Control
<u>Staphylococcus aureus</u>	Lives in the udder or on skin or on wounds such as damaged teat ends. Transferred at milking time by milking machine or milking practices. Controlled by hygiene, milking procedures, and culling. Often resistant to treatment (See Dairy Guideline 404-229).
<u>Streptococcus agalactiae</u>	Lives in the udder. Spread from cow to cow, usually by poor milking practices (i.e., hands, common cloth, milking machine). Controlled by strict hygiene, teat dipping, and dry cow therapy. Can be treated successfully during lactation. (See Dairy Guideline 404-237).
Other Streptococci	Live in many places: udder, cow's skin, environment. Controlled by good sanitation and hygiene, clean stalls, and environmental management. Susceptible to lactation and dry cow treatment. (See Dairy Guideline 404-237).
Coliforms <u>Escherichia coli</u> <u>Klebsiella sp.</u>	Live in manure, or dirty, wet, and muddy areas; polluted water; dirty milking equipment. An environmental problem. Good sanitation and stall management helpful. Infections can occur between milkings, but also caused by poor milking practices. (See Dairy Guideline 404-234).

At the end of milking, minimize machine stripping and liner slippage, shut off the vacuum at the claw before removing the milking unit, and dip most of the teat in an effective teat dip. Calculate amounts of teat dip and dry cow therapy that have been used. These calculations give an indication if every

cow has been treated at drying-off. Normal use of teat dip at every milking amounts to approximately 1-2 gallons per cow per lactation. Usage rates at less than calculated would indicate that teat dipping or dry cow therapy is not being used regularly. (See Dairy Guidelines 404-212, 404-227, 404-236, and 404-475).

Milking Equipment

Have the milking system analyzed. The vacuum level should be measured. More important is a determination of vacuum pump capacity, system vacuum or air leakage, and effective vacuum reserve for the system. In addition, the regulator(s) should be evaluated for response and load test. In my experience, equipment service personnel sometimes do not measure regulator response and load tests or effective reserve. They often examine the vacuum pump and determine the system reserve but seldom test the adequacy of the regulator(s). Other service includes pulsator checks and repair, replacement of worn rubber parts, including milk hoses, vacuum tubes, and teat cup liners at regular intervals. Cleaning and sanitizing of milking equipment should be reviewed. Is there an adequate amount of water which is hot enough to do the job? Cleaning solution should be 115-120° F when it returns to the wash vat. The farm should be checked to make sure that stray voltage is not present. (See Dairy Guidelines 404-250, 404-400, and 404-742).

Housing

Mastitis infections also can originate in the cow's environment, such as housing, exercise or pasture lots, or calving areas. Free stalls should be clean and dry. Dirt stalls should be level and slope properly and should not be dug-out. Stalls bedded with sawdust or shavings should be examined to eliminate the build-up of wet packs under the cow. Manure should be removed from free stalls once or even twice daily. Cows should not have access to ponds, drainage ditches, or swampy areas. Calving lots should be clean and dry. Calving stalls should be bedded with straw but not sawdust or shavings. Keep cows on their feet after milking for about one hour, which allows time for closure of the teat end. Feed silage after milking.

Herd Replacements

The origination of herd replacements should be reviewed. Could purchased animals have entered the herd and introduced an infection? Were home-raised heifers raised as individuals during the first 2 to 3 months of age or were they grouped during the first several months of life and have an opportunity to nurse each other?

Summary

Mastitis prevention is the most important ingredient in mastitis control. Preventive measures include attention to all details. It is cleanliness and sanitation, good milking practices, a properly operating milking system, good housing and environment, and dry-cow management. It includes monitoring the herd somatic cell count from month to month and involves culling when necessary. It can be done. Many herds are doing it successfully but it requires some effort!

Dairy Guideline References (available at local Virginia Cooperative Extension Service offices):

- 404-212 Proper Dry Cow Management
- 404-227 Proper Milking Practices
- 404-228 Guidelines for using the DHI Somatic Cell Count Program
- 404-229 Staphylococcus aureus Mastitis
- 404-234 Coliform Mastitis
- 404-236 Pre-Dipping: Pre-milking Disinfection with Teat Dip
- 404-237 Streptococcal Mastitis
- 404-250 Stray Electricity on Dairy Farms
- 404-400 Cleaning and Sanitizing Milking Equipment
- 404-403 Preventing Antibiotic Residues in Milk and Cull Dairy Cows
- 404-475 Cow Clipping is Important for Quality Milk Production
- 404-742 Guidelines for Milking Systems