

## CONTROL OF MASTITIS\*

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The control of mastitis in dairy cows requires the cooperation of the dairyman. He should have adequate knowledge of the symptoms and means of detection of the disease, and the interpretation of the laboratory examination of the milk samples, to enable him to understand how the disease is spread and controlled.

Mastitis is one of the major problems of the dairy industry. It not only causes loss of milk production and valuable cows but is potentially dangerous to the health of human beings. The following is an outline of a mastitis control program.

I. Full co-operation of the dairyman. Without his co-operation the program fails completely. He should know what the causes of mastitis are so that he can better understand the measures needed to stop infection in his herd.

### A. The causes of mastitis:

1. Predisposing or initiating causes.

a. Injuries such as wounds, bruises from high door sills, stepping on teats, cows mounting each other during heat periods, running through fences, and faulty milking machines.

b. Incomplete or irregular milking causing excessive distention of the udder.

c. Temperature changes such as freezing or chapping the teats.

d. Poor sanitation. An insanitary milking barn. Cows may have to walk through sloppy or muddy barnyards to get to the milking barn. Improper cleansing of the cow before milking. Not cleaning the milking machine sufficiently between milkings. Failure to dip the teat cups of the machine between each cow while milking.

e. Physical abnormalities as warts, "spiders," the teats which drip milk, and the udder which has broken down or has low hanging hind quarters.

f. The period of lactation. Cows are more prone to acquire mastitis at the beginning and at the end of lactation when the udder is too full. This fullness tends to injure the

sensitive tissues.

g. Hereditary factors. Some cow families are more susceptible to mastitis than others.

h. Age of cow. Year after year the cow becomes exposed to many of the above factors. This increases the chances of acquiring mastitis.

i. Other possibilities exist.

2. Infectious causes. The organisms commonly found are:

a. Streptococcus. At least one type may cause septic sore throat in humans.

b. Micrococcus, which is found in soil, air, and water.

c. Corynebacterium, one of the common organisms of pus.

d. The coliform bacteria which are frequently present in manure of normal animals and scouring calves.

e. Other agents, as the calf diphtheria and foot rot organisms, spore-forming bacteria, and yeasts.

II. A correct diagnosis. In most cases mastitis can be detected early if the dairyman routinely uses a strip cup, black bakelite plate in a bucket, or brown paper towel for the foremilk. Milk changes are more easily seen before placing the machine on the cow. A veterinarian can assist in the diagnosis by examining the herd to determine those animals which have an infection. He may use a number of methods.

A. Physically examining the milking and dry cows in the herd. By this examination he determines:

1. The general health of each cow.

2. The feel of the udder. There may be lumps of scar tissue indicating a past or present infection, or certain irregularities which may lead to mastitis.

B. Collecting milk samples from each cow in the milking string. The samples can be checked at the farm and then sent to a laboratory to determine which bacteria are causing the mastitis. Also determined are:

1. The cows which harbor bacteria in the udder and are a source of spread to others. These animals may not show evidence of mastitis.

2. The cows which are in the early or late stages of mastitis.



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C. In badly infected herds a routine examination should be made once or twice a month until the economic loss is no longer a factor. Then, a check-up once every three months helps to keep mastitis cases at a minimum.

III. Segregation of infected animals. When practical, all cows with mastitis should be isolated from the healthy ones and milked by someone other than the regular milker. One method of handling the mastitis herd is to divide it into groups to help prevent spread of the disease. If they are milked in the following order, healthy cows are less likely to contact diseased cows during milking.

Group A—Cows with well-balanced udders and having no mastitis or mastitic bacteria present in the milk samples.

Group B — Cows with normal udders but shedding mastitic bacteria as shown by bacteriological culture of milk samples.

Group C — Cows with physical deformities of the udder showing evidence of mastitis and/or scar tissue, indicating mastitis in the past.

Group D — Cows with badly damaged udders as a result of severe infection. These include those cows which have one or more

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quarters completely lost from mastitis. They should be sold for slaughter as soon as possible.

#### IV. *Strict sanitation.*

A. Avoid sloppy and muddy barnyards. Filth and manure on the udder may lead to infection.

B. Have a good milking procedure.

1. Clean machines regularly and keep them in good repair.

2. Keep the udder trimmed of long hair as mud and manure cling to it.

3. Wash udders with a warm chlorine solution containing at least 200 parts per million available chlorine about one minute before milking. The solution should be at a temperature of 110 to 120 degrees Fahrenheit. It is best to use a separate towel for each animal and not dip a dirty used towel back into the chlorine solution again. Paper towels can sometimes be used.

4. Milk regularly. Milk each cow as quickly as possible taking the machines off in 3 to 4 minutes. Strip the quarters as any milk left helps bacteria to grow if they enter the teats. Do not wet-hand milk.

5. After milking dip the teats in a shallow pan containing chlorine solution, quarternary ammonium solution, or wipe the ends of the teats with cotton saturated with rubbing alcohol. Do not use creosote or coal tar solutions as these flavor milk.

6. Disinfect the milking barn two or three times every week with a hot 2 to 5 percent lye solution and rinse with plain water. To help keep the barn floor dry sprinkle it with lime or super phosphate.

#### V. *Maintain a good herd management program.*

A. Use home-raised heifers as replacements. A purchased animal is a potential mastitis carrier and should be examined carefully before being placed in the herd. Each new replacement should be tested for brucellosis and isolated until she is known to be free from mastitis.

B. Treatment is essential in mastitis but is only part of the program. Early medication is advised for infected animals, and is best carried out when the bacteria causing the infection have been identified by a laboratory. Most treatment is not maintained long enough at one time. Periodic

treatment every few days or use of medicants in the wrong manner cause bacteria to build drug tolerance. This means that when bacteria are not killed during a course of treatment they soon become resistant to that treatment. If a medicine is used which affects some bacteria and not others, a resistance may develop and the mastitis cannot be treated successfully.

C. Reduce the concentrated feed intake of a cow with mastitis. High protein feed tends to increase milk production and makes the udder work harder.

D. Cows should be dried up properly to prevent overdistention of the udder. Heavy producers should have their grain and water intake reduced several days before the procedure is started. Then, stop milking and relieve the udder only when it seems to be too full. If mastitis is present in a quarter keep the pus or infection milked out. The quarter should be treated. Allow a dry period of about 8 weeks or more.

E. Remove cows which are in heat from the herd. Cows mounting each other bruise the udder and this may initiate mastitis.

F. Do not feed calves mastitis milk. There is always the possibility they may harbor bacteria in the system and develop mastitis later. Prevent calves from sucking each other at feeding time by placing them in separate pens or providing muzzles.

G. Disinfect stalls where mastitis cows are kept. First, remove the bedding and burn it. Then apply a 2 percent lye solution to the floor and walls. Rinse it off after 24 hours, if possible.

H. Construct the milking barn to allow plenty of standing room. Doorways should have no steps or only low steps. Keep the barnyard clean and free from debris.

I. Have milking machines checked regularly. Working parts wear out permitting the vacuum to become too high or pulsations to increase and injure the sensitive udder tissues.

J. Other factors are important in individual herds. It is advisable for the dairy man to check periodically each point in his control program. The control of mastitis requires constant effort if losses are to be kept at a minimum.

## MINNESOTA MILK SANITARIANS ASSOCIATION HOLDS REGIONAL MEETINGS

A series of four meetings are being sponsored in various sections of the state by the Minnesota Milk Sanitarians Association. The subject matter covered at these meetings include discussions, demonstrations and interpretations of laboratory methods used in grading raw milk and in the evaluation of finished products. Three such meetings have been held in the New Alm, Fergus Falls and Grand Rapids areas with a fourth meeting in the southern part of the state, scheduled for some time in August. Members of the Dairy Bacteriology staff at the University and regulatory personnel from the Department of Agriculture, Dairy and Food are cooperating with the Association in this work. These meetings have been open to all dairy plant and field personnel. The afternoon programs have been directed primarily to laboratory and field personnel concerned with improving the quality of milk for manufacturing purposes. Since the grade A milk program has become extensive in Minnesota, the evening programs have been devoted primarily to discussions, demonstrations and interpretations of laboratory procedures used in evaluating raw and finished market milk products including cottage cheese. Emphasis is being placed upon proper laboratory techniques and the efficient utilization of the results by industry field service personnel and by management. The rather rapid increase in the number of laboratories in Dairy Plants throughout the state and the increased use of commercial laboratory service by the state and the increased use of commercial laboratory service by the industry has made the subject matter of the regional meetings very timely.

On September 15, 16 and 17 the University of Minnesota will hold their annual Dairy Products Institute. The program for the last day of the Institute, September 17, will cover subjects of interest primarily to Sanitarians. This conference will conclude the year's educational activity of the Minnesota Association.