

Initial Steps in Solving Herd Mastitis Problems

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Most mastitis problems are a repeat of similar mastitis problems which continue to happen over and over. As the problems are repeats, so are the solutions in many instances. Solutions to mastitis problem usually involved short term and long corrections or changes. With this pattern of recurrence in mind, there is a base of information which should be gathered whenever it is necessary to attempt to solve a mastitis problem. This presentation will attempt to focus on the initial evaluation and immediate short term corrections made on the initial visit to the farm. I think the initial solution may become more obvious when the following questions have been answered:

1. Does the *milking technique* used by the milkers and permitted by the manager meet the minimum standards for good milking hygiene?
2. Has the *milking system* been recently evaluated and did it meet at least the minimum standards for design and function?
3. Is the *environment* and *housing* adequate to provide freedom from soiled udders?
4. What *percent of the herd is infected*? What is the *nature of the infections*? What is the situation with regard to the *milking permit*?
5. Is *dry cow treatment* practiced? What is the treatment protocol for clinical cases?
6. What *general type of organisms* are involved?
7. Specific *herd culture* results?

Once these questions are answered, the type of problem at hand will begin to become apparent. When this happens, corrective steps can be taken in an initial attempt to solve the problem. Further investigation and followup information will in time reveal more specifically what must be done to begin a long term control program for mastitis within this herd.

As you make your examination of the problem, take care to reserve judgement until you have completed your entire evaluation. Some areas of concern found early in the investigation may turn out to be minor considerations at the end of your search. Don't be too eager to jump on the first deficiency you find.

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Basic Information

1. **Milking Technique** - The basic question to be answered is --

“Do the milking techniques used by the milkers and approved by the manager enhance or retard the spread of organisms from cow to cow during milking?”

To answer this question, it is imperative that actual observations be made during milking. If possible, several milkings should be observed. An attempt should be made to observe the milking practices without calling attention to the fact that an evaluation is being made. Moreover, it may be very misleading to rely on statements made about milking techniques without verifying such statements by personal observation.

If the following practices are observed during milking, the answer to the question must be that the spread of organisms is being enhanced:

- a. Are rags, towels, sponges or any other items being used on more than one cow during prep or milking? This is regardless of how often the rags or whatever is being rinsed or dipped in any kind of solution. If they go from cow to cow they are enhancing spread and may be a factor in the mastitis problem.
- b. Are teats and udders wet or soiled when the milking machine is attached? Wet milking of dirty teats may increase the new infection rate. It provides bacteria for infections and may increase the number of liner slips during milking.
- c. Is a premilking teat dip being used on other than clean teats? Predipping dirty teats will provide an opportunity for bacteria to be mobilized during milking thus increasing the chances of the bacteria coming in contact with the teat ends.
- d. Is excessive amount of water being used to wash the teats? The smallest amount of water necessary to clean the teats should be used. Excessive water increases the likelihood that the teats will not be dry when the machine is attached. water remaining on the teats serves only to mobilize bacteria and increase liner slips.
- e. Is foremilk being checked for abnormal milk? Consistent detection of clinical cases of mastitis will prevent large scale outbreaks and insure prompt treatment.
- f. Are the machines attached too late to take advantage of the peak of let down? This will surely increase milking time and perhaps lead to uneven milkout between quar-

- ters. Uneven milking out or the perception of uneven milkout by milkers leads to removal of individual cups. This in turn may lead to teat end impacts on the remaining milking quarters.
- g. Is the milking unit properly aligned with the udder and teats? Twisted or torqued units will eventually damage or abrade the base of the udder. Twisting of the teats on the udder may impede milk out. Poor milk out may leave mastitis pathogen in the udder and at least in the case of *Strep ag* this may increase the severity of the infections.
 - h. Are the machines being removed from individual quarters while the remaining quarters are still under vacuum and being milked? This may lead to cross quarter infections and teat end impacts.
 - i. Are the milking units being removed before the vacuum is broken?
 - j. Are they leaving the milking machine on for an extended period of time after the cow is milked out...over milking? Perhaps better to do this than to remove individual quarters.
 - k. Are teats routinely dipped after each milking? Teats should be covered as far as possible up to the udder after each milking. Dipping and spraying are equally as effective when at least 90% of the teat is covered with dip. Failure to routinely apply a postmilking teat dip negates a very effective measure in controlling contagious mastitis pathogens and demonstrates a lack of understanding of mastitis control.

While the milking procedures are being checked, take time to look at the teat ends on several cows. Look at the teats as the machines are removed. Observe for engorgement or blanching which might indicate a vacuum or pulsator problem. Check for small hemorrhages. Remember that rings whether rough or smooth probably do not relate to the machine or mastitis. Look for signs of Pseudocowpox, Bovine Ulcerative Mammillitis, chemical burns or frost bite. Feel the teat ends for fibrous infiltration.

Deficiencies in milking technique and hygiene can be corrected on the spot IF management is convinced that they are contributing to the mastitis problem. This is an educational opportunity where the corrective action usually is inexpensive and benefits overwhelming.

2. Milking equipment - Improperly functioning or designed milking equipment, especially in concert with poor milking technique and hygiene, can greatly increase the amount of mastitis within a dairy herd. I prefer to check the equipment against generally accepted standards (what are they?) rather than nit-pick the equipment or criticize one brand against another. In spite of the fact that dairymen are more willing to blame the equipment, don't be too fast to point out problems. Finish the evaluation first.

Several observations can be made without expensive evaluation equipment which may give some indication of the adequacy of the milking system. Check at least the following items:

- a. Is the system properly rated in terms of vacuum pump capacity (CFM)? Calculate what the proper capacity should be even though you may not have the equipment necessary to check the actual pump capacity.
(20-40 CFM) + 2-3 CFM per milking unit = capacity
- b. Is the vacuum regulator or controller a "sentinel type"? Older, insensitivity weighted controllers must be replaced.
- c. Will the system maintain its vacuum level within 0.5 "Hg when one or two units are open?
- d. Does the system recover quickly to its original set point when large amounts of air are let into the system?
- e. Are the pulsator lines at least 2" in diameter?
- f. Is the milk line properly sized for the number of units per slope?
- g. Are the milk lines properly sloped towards the receiver jar?
- h. Are the rubber parts of the system (liners, air tubes) in good repair?
- i. Are the pulsators working?

Flaws in the function and designs should be corrected. Again remember that many of these problems have not been definitely related to increased numbers of mastitis cases. Also keep in the back of your mind that lawsuits often grow out of claims that the milking equipment was the cause of a mastitis outbreak! Involve the local dealer if at all possible. Arrange to check out the system with the dealer as they usually have the evaluation equipment. With the dealer present, second hand information can be avoided and lines of direct communication developed. However, be prepared to stick by your standards and insist that corrective changes be made.

3.Environment and housing - The housing and facilities should be such that the cows enter the parlor without severely soiled udders and teats that require a great amount of time to clean and dry prior to machine attachment. Take time to walk around the housing areas. Call dirt...dirt and manure...dirt!

Check closely on the following areas:

- a. Are the facilities in good condition? Repair and upkeep of the facilities are a good indication of the ability of the dairyman to manage his operation. In my opinion, poorly cared for facilities are an indication of lack of management skills and are usually accompanied by lack of concern for hygiene in the milking parlor. Excessive numbers of traumatic teat and udder injuries will be found on poorly managed facilities. Poorly maintained free stalls allow cows to sit sideways or backwards in the stalls and fill them with manure and urine.
- b. Is the type and quality of bedding appropriate? Pay particular attention to the free stalls, dry lots and calving areas. Long straw and sand are the preferred beddings. Bedding should be groomed daily in order to keep the

stalls comfortable and prevent manure and moisture accumulations. Check for soiled udders entering the parlor or cows standing in alleys compared to cows resting in stalls. Dirty udders indicate poor daily maintenance of bedding while poor utilization of stalls indicates uncomfortable stalls.

- c. Are the dry lots, closeup pens and calving areas clean? Many new infections take place in these areas when cleanliness is lacking. Is there enough space for the average number of cows?
- d. Are there enough free stalls? To find the minimum number, multiply the number of milking cows by 0.85. There should be a stall for 85% of the number of milking cows. Look for cows standing or resting in the alleys. This may be a temporary situation due to seasonal calvings or purchase of new cows.
- e. Are there other places where cows crowd up? Don't overlook the overcrowding situation in the warmer months when cows look for shade or relief from insects.

4. Percent of Herd Infected - It is important to get some idea of the percentage of cows infected with nonclinical and clinical mastitis. This will give some ideas of the seriousness of the problem and allow for a prognosis as to the outcome.

Ask the following questions:

- a. How many cows are in the sick pen for mastitis or how many cows are you now treating for mastitis? Of that number, how many are chronics and being treated repeatedly? Is there a relationship to the occurrence of clinical cases and calving?
- b. What has the bulk tank SCC been running? Rough estimate...

$$\% \text{ infected} = 3.3 \star \text{tank SCC}$$

+/- 5% if under 500,000

+/- 15% if over 1,500,000

A review of the tank SCC may also give an indication of when the problem began. Check the DHIA, state or milk cooperative reports for SCC information. Check as many records as you can to get a feeling for the beginning and duration of the problem. Lack of understanding of these records indicates a need for continuing education.

- c. What is the situation with regard to the milk permit? If the SCC is over the legal limit it may call for immediate action to keep the dairyman in good graces with the cooperative and state officials. Repeated illegal counts also indicated a lack of monitoring of the SCC to allow a problem to get out of hand.

Information on the SCC and number of clinical cases (udder only or systemic) may allow you to generalize as to the type of organisms causing the problems, i.e. gram positive or gram negative. This may help you to concentrate on certain areas known to be linked to these organisms.

5. Treatment protocols - Dry cow treatment is an essential part of long term mastitis control. Prompt and proper treatment of clinical cases of mastitis is very important. Ask these questions:

- a. Are all cows dry treated in all four quarters with a commercially prepared, sterile product? Does the infusion technique comply with acceptable hygienic standards? Anything less than treatment of all animals in all quarters is not good enough. The use of homemade products could contribute to a mastitis problem. With very few exceptions, there is no need to concoct homemade products as they are no more efficacious than commercial products. Moreover, homemade concoctions are much more liable to contamination.
- b. Are clinical cases of mastitis promptly treated with commercially prepared, sterile products? Check the treatment protocol for evidence of poor infusion technique.
- c. Is the dairyman treating cases based on SCC information? This is not a cost effective procedure.

6. Specific organisms involved - After the initial information is discovered, the specific organisms involved in the mastitis outbreak need to be determined. Milk samples for culture can be collected at the initial visit or on a followup visit. Once the culture results are obtained, that information plus the initial observations should allow for the formation of a short term strategy.

Conclusion

Once the answers to most of these questions are in hand, a short and long term program for prevention and control of mastitis can be designed. In most instances, the plan will be fairly generic with a few specific modifications to fit the problems on a given farm. Failure to collect the appropriate information may lead to a plan which will produce little improvement and much dissatisfaction on the part of both the dairyman and the veterinarian. Be prepared for a continuing educational opportunity. Mastitis control works! A program can be designed to minimize the economic losses due to mastitis on all dairy farms.