

Udder Hygiene in the Control of Mastitis

J. W. Pankey, Ph.D.
Dept. of Animal Sciences
Hill's Building
University of Vermont
Burlington, VT 05405

Introduction

Bovine mastitis persists as the most expensive disease in dairy cows. Losses can reach more than \$180 per cow annually. Decreased milk production, due to subclinical mastitis, accounts for approximately 70% of the economic losses. Discarded milk, cost of antibiotics, premature culling, and veterinary expenses are responsible for the remaining 30% (4). Prevention of the disease is the most economically feasible method of control. The 5 point plan for mastitis control will reduce mastitis losses and increase profits: 1) Dry cow therapy, 2) proper treatment procedures for clinical cases, 3) use of recommended milking practices, and 4) effective culling contribute to a complete mastitis control program. The fifth point, *udder hygiene*, is probably the single most effective control procedure in the prevention of udder infections (2, 4).

Rate of new udder infections is highly correlated to the number of mastitis pathogens on the teat end. Every effort must be made to maintain minimal bacterial load at the teat end. Good udder hygiene practices assure this goal. The hygiene program should be a 24 hour program; not only at milking time.

Hygiene for Dry Cows

Dry cows are the most neglected group of cows on many dairy farms. Too often these cows are maintained on poor quality pasture or in woodlands. In many cases these cows are not observed for weeks. If dry cows have access to ponds or muddy areas, mastitis problems often develop in the fresh cows, because of gross contamination of the teats and udder with mastitis pathogens.

Another problem area for dry cows is the "heavy springer" lot or pen. Often this area has been used for years and concentrations of mastitis pathogens may have increased. This can be true for small pastures or maternity pens. These areas should be dry, thoroughly cleaned between calvings, and sanitized where possible. Environmental streptococci are commonly found in these areas. Areas on the farm that are used for replacement heifers should be included in this section. Attention should be given to nonlactating cows/heifers to minimize exposure to mastitis pathogens.

Hygiene for Lactating Cows

Intermilking Hygiene

Cows should be kept in clean, dry areas between milkings. Housed herds require bedding that is dry and requires a low maintenance. Wet sawdust bedding is a major source of contamination by coliform bacteria, especially *Klebsiella spp* (5). If sawdust bedding is the only option, it should be kiln dried. Daily attention is required, especially the back-half of stalls, to keep the udders on a clean, dry area. Numerous other materials are used for bedding: straw, wood shavings, sand, shredded paper, peat moss, to name a few. Consideration should be given for the best bedding available within a particular region that minimizes exposure of cows to mastitis pathogens at the least expense.

Herds that are pastured between milkings usually have fewer environmental mastitis problems than housed herds. However, these herds can develop serious problems when an oversight leads to severe outbreaks. Lanes, roads, or paths from the milking parlor to pastures should be well drained and maintained in good condition. Loafing areas should be dry at all times. Farms with insufficient shaded areas force cows to congregate in small, often poorly drained areas that soon become unsatisfactory for bedding down, due to accumulation of urine and feces.

The amount of extra time spent cleaning teats and udders at each milking depends on hygiene practices between milkings. Keep cows clean and dry 24 hours a day.

Milking Time Hygiene

Mastitis develops after pathogens traverse the teat canal. The teat canal must be penetrated for bacteria to gain access to the mammary gland. The greater the concentration of pathogens at the orifice, the higher the risk of infection. During a 305 day lactation, a dairy cow has 610 milking time opportunities to be "invaded." Every effort must be made to minimize pathogen concentration at milking because this is one of the few times that the teat canal is opened and a direct route of penetration is available.

Current, premilking udder preparation recommendations include the use of single service paper towels wetted with 50 to 200 ppm sanitizer to wash teats and forestripping to

examine milk for signs of clinical mastitis. Teats should be washed and dried thoroughly to remove organic load and bacteria (4). Premilking sanitation has a new option for consideration—predipping. Predipping utilizes low concentration germicides (0.1 to 0.5% active ingredient) that provide more effective antimicrobial activity than udder washes at 200 ppm (.02%) (1). One potential problem of predipping is increased germicide residues in the milk. Every precaution must be followed to prevent residues. Teats must be dried thoroughly prior to machine attachment. Research has demonstrated that when concentrations of germicides greater than 0.5% are used, the level of residues in milk increases (1).

Field studies in Vermont compared predipping with good-udder-preparation to good-udder-preparation alone, as described above (3). Studies were conducted on four well managed dairy farms that generally maintained somatic cell counts below 350,000/ml in bulk tank milk. *Staphylococcus aureus* and *Streptococcus agalactiae* were not problems on any of the cooperator herds. Environmental pathogens were the primary cause of mastitis in all herds. These studies were conducted for approximately one year on each farm and three different iodine based teat dips were used. Concentrations of iodine ranged from 0.1% to 0.5% for the three products. On each farm the same product was used as a pre- and post-dip. Half the cows were pre- and postdipped and were compared to the other half of the herd where good udder preparation and post dipping were used (3).

Results were positive on all farms. Predipping reduced infections by approximately 50% for environmental pathogens (coliforms and esculin positive streptococci). Consistent levels of reduction were observed across all four herds; the range was 48 to 57% reduction for predipping with good-udder-preparation and post-dipping compared to good-udder-preparation alone, with post milking teat dipping (3).

The practice of predipping has been evaluated and offers a new option in the control of environmental pathogens; but most problems with environmentals develop through poor hygiene practices. Predipping is another tool to be used until the **cause** of the problem is corrected.

Postmilking teat dipping has proven an excellent procedure for the control of contagious mastitis pathogens, primarily *Staph aureus* and *Strep. agalactiae* (4). Volumes of data are available on numerous formulations. New udder infections can be reduced more than 50% by sanitizing teats after milking. Teat dipping accomplishes at least two important goals: 1) mastitis pathogens are killed and 2) milk residues are removed (2).

Summary

Udder hygiene is vital to mastitis control. Much emphasis is given to milking time procedures: udder preparation, clean machines, and postmilking teat dipping. These are vital components of a total program. Equally important are hygiene programs for cows between milkings, dry cows, and replacement heifers. Clean, dry teats 24 hours a day will aid in the control of mastitis.

References

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