Milking time hygiene prevents udder infections

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EAST LANSING, Mich. — Mammary gland infections (mastitis) are caused by several types of bacteria. Some pathogenic bacteria (Staphylococcus aureus, Streptococcus agalactiae and Streptococcus nonagalactiae) survive well on teat skin and on milk while other bacteria survive throughout the environment in mud, manure, stagnant water and other unsanitary places.

Since mastitis is a function of the numbers of organisms at the teat end, prevention of mastitis is dependent on reducing pathogens within a cow's environment. Effective milking time hygiene can prevent many cases of mastitis by minimizing transfer of bacteria from cow to cow during milking.

To prevent mastitis the milking procedure should be divided into three phases: pre-milking teat sanitation (prepping); post-milking teat disinfection; teat cup liner sanitizing between cows (manual or automatic backflushing).

Pre-milking teat sanitation

During prepping the dairy producer is preparing the cow for milk letdown as well as cleaning or sanitizing the teat. It is recommended, in order to maximize both milk letdown and teat end sanitation, teats should be washed and dried completely. Drying of teats with a single service paper towel improves machine function as well as milk letdown.

Sanitation of the teat prior to machine attachment is the first step in decreasing bacterial contamination of milking equipment.

Iodine at 200 ppm has been shown to be the most effective premilking sanitizer Use of 200 ppm iodine in the water supply during hand washing of teats in parlors or in fresh bucket water for stanchion barns will result in a 90 percent reduction of 'Staph' colonies and a 98 percent reduction of Coliform colonies.

Use of warm water alone results in 0 percent reduction of 'Staph' and a 72 percent reduction of Coliform colonies.

Chlorine at 500 ppm is an effective teat sanitizer but does not work well for in-line use, that is, metering into the parlor water supply for teat washing.

Therefore, in a parlor milking system a cow's udder and teats should be washed for minimum of 10-15 seconds with clean running water containing 200 ppm iodine. The iodine can be accurately metered into the water supply.

Water for washing teats should be minimal, that is, enough to wash the teats and base of the udder. Too often, washing the side of the udder will result in collection of suspended dirt and manure at the top of each inflation. Use of excess water increases bacterial contamination of teats, inflations and milk supply and potentially, increases rate of mastitis.

Following washing, teats should be dried with single service paper towels (1 or more per cow). Almost any type of paper towel will suffice for drying teats.

Drying of teats reduces bacterial contamination on teat skin, improves milk letdown, decreases liner (inflation) slippage and reduces iodine concentration in milk. It is essential that teats be dried when prep stalls or excess water are used.

A stanchion barn prepping procedure should include bucket of clean water containing 200 ppm iodine and single service paper towels (heavy duty). A paper towel is immersed or dipped in the iodine wash water and then used to wash a cow's teats and udder. Drying can be done with the same towel or clean towel.

Post-milking teat disinfection

Several methods and compounds have been used to kill bacteria on teat skin following machine removal. The most effective method has been teat dipping with 10,000 ppm (1 percent iodine + emollients, 40,000 ppm (4 percent chlorine or 5,000 ppm iodine + 1% emollients.

Spraying the teats with a hand sprayer is an effective method if teats are covered with 10,000 ppm iodine with emollients. In most cases dairy producers do not take sufficient time with a hand sprayer to adequately cover all four teats. Therefore, dipping is the superior method of applying a post-milking sanitizer.

Another method of applying a post-milking sanitizer is through the use of floor installed automatic or milker-activated teat sprayers containing 10,000 ppm iodine.

The automatic sprayers would be of major importance in parlors with automatic "take-off" milking units. Milkers would not have to return to each cow to dip or spray teats. In addition, lag time from machine removal to application of postmilking sanitizers could be reduced.

California workers have shown that floor teat sprayers were successful in covering 96 percent of teat ends with germicide. In an 8 month trial with 240 cows, application of post-milking sanitizer by automatic teat sprayer or hand dipping was comparable in bacterial kill on teat skin and prevention of infections.

Basic problems with automatic sprayers are irritation to milkers from fine mist, variation in coverage resulting from cow size difference and maintenance of equipment.

Teat cup liner sanitation between cows

The benefits of sanitizing liners between cows is unlimited. Prevention of bacterial transfer from infected to non-infected cows would be highly beneficial.

A major problem with liner sanitation has been use of contaminated water, air lock in milker units and inadequate surface contact time. Dairy producers are not willing to spend adequate time to totally flush claws, hoses and liners between cows for full sanitation.

English workers had shown several years ago that pasteurization was the only adequate measure to sanitize liners. However, recent work in California has shown that "backflushing" can be used to sanitize milking units.

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