

Explain the Why's Along with the How's When Training Employees and Family Members to Milk Cows



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Consistent and properly implemented milking practices are important in preventing mastitis and to optimize milk production in dairy herds. When training new employees, the proper steps and the order to complete them are delineated. However, explaining why each of these steps needs to be completed and the potential consequences if they are not performed correctly are often omitted from these training sessions. By explaining why practices are important helps new and experienced people milking one's cows understand why each practice must be completed consistently at each milking.

Step 1: Calm, quiet handling and overall atmosphere for dairy cows prior and during milking is essential for proper and efficient milk letdown. Stressed or frightened cows release the hormone, epinephrine (also known as adrenaline), which blocks the actions of oxytocin. Oxytocin is the hormone responsible for milk letdown. The negative effects of epinephrine can last for 20 to 30 minutes, thus illustrating the need for calm, smooth handling and movement of cows around milking time, be it to the milking area (holding pens or barn) or the completion of feeding or other chores just before or during the time cows are milked.

Step 2: Wear disposable nitrile or latex gloves. Gloves are used to prevent the spread of disease, not only between cows, but also to prevent disease in people milking the cows. Our hands contain many cracks and crevices that bacteria can hide within, colonize, and allow for the spread of bacteria between cows and between humans and the cows themselves.

Step 3: Apply pre-dip to the bottom 3/4 of each teat and leave for at least 30 seconds. Pre-dip contains a germicide designed to kill environmental sources of mastitis-causing bacteria, but to be effective must remain on the teat for at least 30 seconds.

Step 4: Fore-strip cows. Stripping 3 to 4 streams of milk from cows before attaching the milking unit helps with milk letdown, flushes bacteria from the teat end, and allows one to detect abnormalities in milk and provide follow-up evaluation and attention for cows when needed. Steps 3 and 4 can be reversed.

Teat Dip Do's and Don'ts

- Use by expiration date
- Store dip containers in a cool, dry area
- Prevent teat dip from freezing
- Dip cups should be emptied and cleaned after each milking or whenever they become contaminated within a milking

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Step 5: Use single-use paper or laundered towels to clean udder and remove pre-dip. The purpose is to remove any dirt or manure from the teats along with the applied pre-dip. Particular attention should be paid to the very bottom of the teat. Using a single-service paper towel or properly washed and dried cloth towel is one defense in preventing the spread of certain types of bacteria from cow-to-cow which cause mastitis. Towels should not be used on more than a single cow; this practice includes not turning the towel over and wiping a second cow or placing multiple towels on top of one another and discarding the top towel after wiping each cow.

Step 6: Attach milking unit within 1 to 2 minutes after prep. Milking units should be attached within 1 to 2 minutes after first touching the udder. To accomplish this, the correct number and order for attaching milking units (or timing in a tie stall barn) based on application of pre-dip and fore-stripping protocols must be followed. This practice is necessary for proper and timely milk letdown. Attaching the milking units too soon or too late will result in a delay in milk let-down and possibly result in damage from the milking machine to the teat ends. This damage to the teat ends, known as hyperkeratosis, results in excess tissue at the teat end that bacteria can colonize and increases the chances of a cow getting mastitis.

Within 30 seconds of touching and/or cleaning the teats, oxytocin is released into the blood stream, which in turn results in milk flowing from the cells that synthesize milk, known as alveoli, into the ducts and then cisterns of the mammary gland. Less than 20% of the total milk production is stored in the gland and teat cisterns and, thus, the majority must be “released” from the alveoli cells. One can think of the smaller ducts connecting the alveoli as side streets which are in turn connected to a main highway. It takes time to “start a vehicle” (milk let down) and then more time elapses as you leave your home driving through side streets before you are on the highway (major duct system and cisterns in the udder) to your final destination (collection of milk).

Step 7: Prevent teat cup squawks and shut off vacuum before removing unit. Both of these unwanted practices may result in a new infection in another quarter as contaminated milk from another quarter may enter the teat end and not be removed since the cow is done milking.

Step 8: Apply post-dip immediately. An effective post-dip should be applied to all 4 teats immediately after removing the milking unit, such that the bottom $\frac{3}{4}$ of the teat is covered. In robotic milking systems, managers need to continually check that the robots are applying post-dip adequately to all quarters (check several cows) and, if necessary, adjust the calibration for proper coverage.

Post-dipping kills a significant number of bacteria on the teats, helps heal skin lesions, and optimizes teat skin condition. All of these factors help reduce the chances of bacteria entering the mammary gland. Post-dipping is especially effective at reducing bacteria that are spread from cow to cow at milking time, such as *Staph. aureus*. Consistent application of post-dip helps reduce new infections, but will not reduce or eliminate existing infections.