

# Increasing Your Dairy's Profits with a Proper Milking Routine

Andrew P. Johnson

Total Herd Management Services, Inc., W 8275 Cloverleaf Lake Road, Clintonville, Wisconsin 54929  
Email: [drandy@theudderdoctor.com](mailto:drandy@theudderdoctor.com)

## ■ Take Home Messages

- ▶ Strip 2-3 squirts of milk from each teat.
- ▶ Predip teats and cover at least 90% of teat and make sure the predip is stays on for a minimum of 30 seconds.
- ▶ Wipe teats dry making sure to clean teat wall and teat ends.
- ▶ Attach unit to the cow's teats 75-90 seconds after stripping.
- ▶ Post dip with effective product and get 90% coverage

The most important part of the "Mastitis Triangle" is milking routine. The milking routine is where the dairy farmer has the greatest opportunity to control mastitis on their dairy. Mastitis is defined as a disease of man spread to the cow. What the dairy farmer and his employees do during milking will have the greatest impact on over all milk quality.

The milking routine is critical to producing quality milk and reducing the level of new infections. Under normal conditions, the milking routine is where a minimum of 70% of all mastitis control occurs. More time needs to be spent at dairies during milking in order to determine whether the routine is good or needs to be fine tuned. If you were to give a dairy farmer a test on milking routine, most would score a perfect test. Unfortunately, what really goes on during milking is much different than what the farmer thinks is going on.

Every dairy farm needs a well defined milking routine. This milking routine must be explained to all the people milking cows, must be properly demonstrated to all the people, and then posted on a wall so every person knows what normal is. Cows are creatures of habit and must be handled in a consistent manner each and every milking. If we can get every person on the dairy to milk cows the same way each and every milking, the end results will be very positive. On every dairy, there needs to be consequences to the people

milking the cows if their behavior is unacceptable. Unfortunately on most farms, the only one that suffers from poor performance is the owner of the dairy and their cows. Positive actions need positive rewards while poor performance needs to be dealt with appropriately.

Whether a dairy has a stanchion/tie stall barn or parlor, a defined milking routine is needed. The main goal is to keep things simple. I like to limit all dairy farm types to a two step milking routine. A two step milking routine means you only go by the cow two times to accomplish all the steps of the routine. On the first step, the teats are fore stripped and predipped. On the second step, the teats are dried and the unit attached. Although there are some differences amongst , the general concept applies to all.

Under all dairy conditions, a full milking routine will result in faster milking, more milk production, and lower SCC. I cannot think of a single reason any dairy farm would want to reduce steps from a full routine to a partial routine. Taking short cuts usually results in poor performance and more mastitis. A full milking routine is an absolute must on all dairy farms.

The most important goal of any milking routine is to reduce the bacteria on the cow's skin prior to unit attachment. Mastitis control is simply a numbers game. The more bacteria there are on the teat skin when the unit is attached, the higher the risk to new infections. Yes, mastitis control is simply a numbers game.

Every milker must wear gloves during milking. Gloves will reduce the risk of bacteria that comes from the milkers hands. A dairy farmers hand can be a primary source of Staph Aureus and various environmental bacteria. One has to understand that wearing gloves alone is not an adequate step in the control of mastitis. Gloves get dirty during milking and must be cleaned during milking. I suggest that the gloves be cleaned after each group of cows is finished with step one of the routine and washed as needed during the milking process. I like to see gloves cleaned after a dirty or mastitic cow is stripped. Keeping gloves clean will help reduce the risk of bacteria numbers on the teat. Gloves can be cleaned by dipping them in a bucket of warm water with sanitizer or installing some faucets to clean the gloves in the parlor.

The most important factor in how cows milk out is lag time. Lag time is defined as the time from fore-stripping to unit attachment. Despite what many people feel, lag time only starts when the teats are stripped. Lag time has a huge impact on milking time and the over all let down response of the cow. The newest data now suggests that a longer lag time is better than a short lag time. The ideal lag time should be 90 seconds with an acceptable range of 75-120 seconds. For years, we have always talked about a 60 second lag time, however we have found out as milk production as increased, too many cows were having units put onto empty teats.

The longer lag times have caused us to rethink how we approach a dairy's milking routine. In the past, we talked about working in groups of two to four cows when trying to get the timing correct. Now, we are talking working in groups of four to eight cows in order to extend the lag time to 90 seconds.

Fore-stripping teats is a critical part of any milking routine. Fore-stripping does the best job of causing oxytocin release from the cow's pituitary gland. There is nothing that can replace the effect of let down better than fore-stripping. On dairies that fore-strip, the cows milk faster, give more milk, have lower new infection rates and detects abnormal milk quicker. Several new research projects have clearly shown that cows fore-stripped will milk out one minute faster than the cows not fore-stripped.

I prefer fore-stripping at the very beginning of the milking routine, however, there is nothing wrong with fore-stripping after the predip has been applied. The main reason I prefer fore-stripping first is because you wipe off some of the loose organic matter prior to predipping and you start the let down clock immediately. My main concern about fore-stripping after predipping is whether too much predip is removed from the teat or not. I recommend that dairies that fore-strip after predipping should predip the teats again. In order to kill bacteria, you need enough predip on the teat to accomplish this.

Before milking, the teat skin needs to be properly sanitized to effectively reduce the number of bacteria on the teat. Controlled research has shown that predipping is the most effective way to reduce bacteria numbers on the teats. Unfortunately, if the milking routine is done perfectly, only 85% of the bacteria are removed.

So if the cows are dirty and have 1,000,000 bacteria on their skin prior to sanitation and the person does a perfect job of sanitizing the teats, there will be 150,000 bacteria left on the skin when the unit is attached. If the cows are kept clean and dry and come in with only 100,000 bacteria on their teats and a perfect milking routine is being done, there will only be 15,000 bacteria left on the skin. As you can see in this example, there are still more bacteria on the cows teat after sanitation of the first than there is prior to sanitation on the second. Keeping cows clean, dry and comfortable is critical to any milk quality program.

The most effective predipping occurs when at least 90% of each teat is covered with predip and it stays on the teats for at least 30 seconds. Coverage and contact time is the key to making predipping work. If either of these two things do not happen, predipping will not give you the results you want.

Predipping can be done many different ways. You can use a dip cup and dip each teat making sure you get 90% coverage. Two new methods of predipping are foaming and power scrubbers. I really like foaming as a way to sanitize the

teats. Foam is created by mixing compressed air with the predip. The foam is similar to shaving cream in consistency. With foam technology, it is easy to get great coverage on each teat and the foam definitely does a better job of cleaning the teats. Power scrubbers from Italy are expensive, but they do an average job of cleaning the teats. Independent research has shown the teat scrubbers do not adequately clean the teat ends and do not provide additional stimulation to the teats. The other issue with Power scrubbers is the high maintenance required. No matter what method you use to predip, the most important point is coverage.

A critical step in reducing bacteria numbers as well as removing the most filth from the teats is the drying step. In order to properly dry teats, you need to follow some simple rules. You can only use one towel per cow and it must be dry. It is very difficult to get a teat dry when you use a damp cloth. You can use either individual paper towels or cloth towels. I prefer cloth towels because they do a better job of getting the teats clean and dry. If cloth towels are going to be used, the towels need to be washed in hot water with detergent and bleach and dried in a dryer. There are no exceptions to these rules.

The way you dry is the most important. I prefer that the milker wipe all four teats dry, then flip the towel and wipe the teats again making sure the teats are as clean and dry as possible. If a dairy wants to produce the highest quality milk possible with the lowest rate of new infections, the person drying the teats will actually clean the teat ends when wiping the teats dry. The single biggest issue I see on dairy farms having a mastitis problem is not properly cleaning the teat ends. When drying teats, you must make an actual physical pass across the teat ends too. Not only does it help reduce mastitis by cleaning the teat ends, but you also increase the let down reflex by stimulating the nerve endings in the teat ends. I like to see the teats dried with a twisting motion and ending with a rubbing action across the teat ends.

It is very important for the farmers to monitor teat end cleaning. This can be done by simply rubbing the teat ends after drying with a square alcohol pad. If the alcohol pad is dirty, you know the teat ends are not being cleaned properly. At the University of Minnesota, I developed a teat cleaning scoring system. The teats are checked with a large cotton ball soaked in alcohol. Use one cotton ball per teat and rub down one side and across the bottom of the teat. If the cotton ball is clean, the score is 1. If the cotton ball has dip stain on it, the score is 2. If the cotton ball has manure on it, the score is 3 and if there is a lot of manure on the cotton ball the score is 4.

On several large farm trials, I have found that when people are doing a great job with the teat drying, at least 90% of the teats should score 2 or less. Several top-notch dairies had over 95% of the teats score 2 or less. This teat scoring system makes it easy for anyone to evaluate the job the milkers are

actually doing and will provide a teaching tool for improvement if necessary. It is hard to argue with the dirty cotton balls.

After drying, the milking machine must be carefully applied to the teats. The less air that is leaked in while attaching the unit to the cow, the lower the risk to new infections. People can be taught proper unit attachment and with a little practice, they can do an excellent job. My goal is to hear less than 5 teat cups per 100 teat cups attached.

After the unit is attached, the person must take a few seconds to properly adjust the machine. In order to get complete milk outs with minimal liner slip, the machine must hang squarely on the udder with a slight forward pull. Many people grossly under estimate the importance of unit alignment.

Once the machine comes off, the teats need to be effectively post dipped. Effective post dipping means at least 90% of every teat is covered with dip. The milking machine is the most effective washing machine ever invented. During milking, the teat is washed with milk. The reason the teats are dipped is not to cover the teat ends, but to remove the milk left on the teat skin after milking. If milk is left on the skin, this provides the food for bacteria to grow. Proper teat dipping requires proper coverage.

A proper milking routine is not rocket science. If you follow these simple basic steps, quality milk will be achieved on your dairy:

- Strip 2-3 squirts of milk from each teat.
- Predip teats and cover at least 90% of teat and make sure the predip is stays on for a minimum of 30 seconds.
- Wipe teats dry making sure to clean teat wall and teat ends.
- Attach unit to the cow's teats 75-90 seconds after stripping.
- Post dip with effective product and get 90% coverage

Every dairy farm in Canada is capable of producing milk with a bulk tank SCC under 150,000. It is not the size of your herd that makes the difference, it is your attitude. Dairies that produce excellent quality milk have very positive attitudes.

