F-MR-4: Principles of Ideal Pre- and Post-milking Cow Prep

The factors effecting milk letdown, milk flow rate, and milking machine-on-time are: milk yield, stage of lactation, quality and time of milk letdown stimulus, and prep-lag time.

Cow prep time = the time taken to clean the teat surfaces of dirt, manure and teat sanitizers prior to milking machine attachment. Optimum milk let down stimulation requires the tactile stimulation of the teat skin surfaces for 10 to 20 seconds. Pre-dipping without teat massage is not considered a quality milk letdown stimulus. Fore-stripping is the most powerful milk letdown stimulus but also effective wiping of teats provides adequate stimulation for proper milk letdown.

Prep lag time = the time from the initial tactile contact with the teat surfaces until the milking machine is applied. Ideally, this should be between 60 to 120 seconds. The prep-lag time for cows being milked 2X should be shorter than cows being milked 3X. Prep-lag times should never be less than 60 seconds nor should they ever extend beyond 3 minutes.

Contact time = the time required for the teat dip sanitizer to kill bacteria on the teat surfaces. It should be at least 30 seconds.

The ideal pre- and post-milking cow prep procedure should:

- Standardize procedure to minimize variation between milkers
- Minimize or eliminate water use
- Focus attention on the teat surfaces only
- Include the use of an effective teat sanitizer (i.e., pre-dip)
- Remove all dirt and manure from all teat surfaces (especially teat end) and assure complete pre-dip coverage
- Use fore-stripping early in the cow prep procedure to observe for signs of clinical mastitis (abnormal milk) and achieve optimal milk letdown stimulus
- Allow pre-dip at least 30 seconds of contact time to kill bacteria
- Dry all teat surfaces to remove all dirt and pre-dip. Make sure that after the teat surface has been cleaned and dried, the next step should be milking unit attachment
- Consistently achieve complete emersion of each teat at every milking with an effective post-milking teat sanitizer
- NOT slow down milking
In the context of a parlor, we have found that preparing cows in groups of 4 usually works best if recommended 10-20 second teat cleaning is routinely accomplished. However, the number of cows within one prep sequence depends on the quality and length the pre-milking teat preparation procedures. To achieve prep-lag-times within a range of 60-120 seconds, in many cases will require that either more time is spent cleaning/fore-stripping teats or that more cows are included in the pre-milking prep sequence. For stall barn application, the use of an end-of-milking indicator is helpful in organizing the milking routine. The pre-milking procedure diagram below suggests some viable cow prep procedures but there are numerous combinations that will optimize milking at your farm. Using a stopwatch and keeping in mind the basic criteria listed above you can devise an effective protocol for your dairy.

It is recommended that cows are kept standing for 30 minutes after milking to allow the teat and teat orifice to recover completely and the post milking teat sanitizer have had chance to dry. Many provide feed for consumption after milking to keep the cows standing after milking.

Diagram courtesy of Lennart Petersson, IBA, Millbury, MA (2011).