

## What About “After Milking” Protocols in the Parlor?

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When it comes to milk quality, many dairy herds emphasize pre-milking protocols, such as application of germicides, teat stimulation and drying of teats. This emphasis is warranted, many standard preparation practices help reduce mastitis and improve milking efficiency. But what about after milking? What critical practices after milking also contribute to mastitis control and more efficient milking? Here are three points to consider that involve both equipment, as well as the human-side of milking.

- 1) Post-milking teat dipping- This is one of the most important practices of a sound milking protocol. Every milking quarter of every cow should be dipped immediately after milking. Teats need to be completely covered, which is difficult to accomplish when sprayers are used rather than dip cups. Teat dip cups must be free of organic matter. Recently, there were several herds in Michigan that experienced increases in mastitis, in part caused by either improper formulation of the teat dip (separate components such as germicide and activator did not fully mix into a homogeneous solution) or a failure of the pump system that titrates each component into the formulation for the final compounded dip. *In these herds, milking personnel noted an ‘off color’ or unusual viscosity relative to the normal dip after application on the cow’s teats.* In some cases, this resulted in ulcers and reddening of the skin. One herd stated that ‘although the two dip components were supposed to be mixed at a 1:1 ratio, one of the barrels was emptying four times faster than the other! Each time you start the use of a new barrel or container of a dip component, mark the volume level of solution and date on the barrel. Follow consumption of that and any other component containers regularly to ensure that the respective flow rates are what is expected according to the labelled ratio of the final product. For example, a 1:1 ratio in the final product implies equal consumption of each component and thus equal decrease in volume in each container. This may be complicated for products that additionally require mixture of water into the formulation.
- 2) Proper mouthpiece chamber (teat) vacuum- When teats are subjected to high vacuum during milking (generally greater than 3 to 4 inches of mercury [inHg]) within the mouthpiece chamber (top of the inflation), poor blood flow, or congestion, can occur. This is similar to placing a tight rubber band on your finger. Continued high vacuum in the mouthpiece changes teat shape, which disrupts milk flow and can impair teat health and resistance to infection. Numerous causes can lead to this problem, including poor ventilation of the cluster, improper pulsation, liners that do not ‘fit’ well with teat size, or overmilking. Digital vacuum recorders can identify high mouthpiece chamber vacuum during milking, however, observation of teats after milking can help ensure that this is not a problem in your herd. Look for purple discoloration of the skin or ‘bands of color’, as well as rings of ‘pinched skin’ at the top of the teats (Figure 1). This is not

normal and if a high proportion of cows have this problem, your cluster vacuum, pulsation, liners, and choices in air vents should be evaluated.

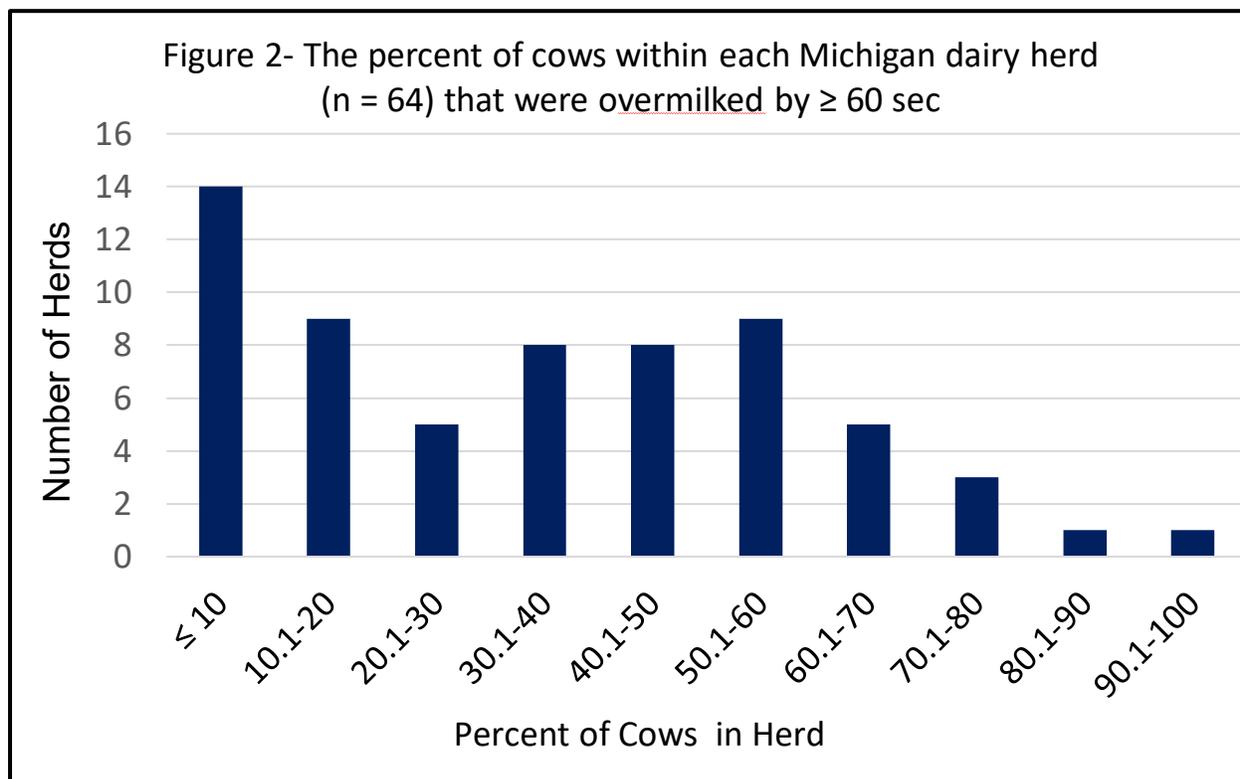
**Figure 1- Discolored teats as a result of high vacuum exposure during milking**



- 3) Automated detachers (take-off) of milking clusters- This equipment helps prevent overmilking of cows. Overmilking occurs when milking (unit attachment) continues despite milk let down from the udder having ended. This results in continued exposure of empty teats to vacuum, which can lead to poor teat health and increased risk for mastitis. Cow should not be milked 'dry' and if hand stripped after milking, a cup of milk should be easily attained. A recent study in 64 Michigan dairy herds found that the proportion of cows within each herd that were overmilked by more than 60 seconds varied considerably. The best third of herds had less than 20% of their cows overmilked, and a reasonable goal is to have less than 10% of cows overmilked by more than 60 seconds.

Overmilking negatively effects teat health and mastitis and reduces parlor flow by increasing unit on time. This decreases parlor turnover rate and most importantly, increases the time in the holding pen and parlor for cows when they could be laying down resting or eating, which decreases milk production. Thus, automatic take-off equipment should be evaluated regularly, along with other milking equipment. Additionally, milkers should be reminded to rely on automatic removal of milking units and to detach units manually only for a few select cows such as after a unit is kicked off.

Conversely, if the automatic detachers are not well maintained, milkers can get frustrated and resort to more frequent use of manual removal of units. This will likely result in more overmilking.



### Summary

Pre-milking as well as post-milking protocols play an important role in efficient milking, mastitis control and teat health. Milkers should consistently apply germicide after milking and if equipment is used to mix teat dip formulations, ensure the mixing equipment is functioning and calibrated properly. After milking, signs of poor vacuum dynamics, especially high vacuum exposure on the teats, should be monitored. Finally, automatic detachers should be maintained properly to ensure that units come off at the right time after milking to help decrease manual take off of units.