

MILK QUALITY

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Controlling Dry Off Procedures on Your Dairy

The following article is from a presentation by Dr. Paul Virkler at the National Mastitis Council meeting.

One of the highest risk periods for mastitis in a cow's life is the period just after she is dried off. Bacteria enter the mammary gland when the teat canal is open, and in the period just after dry-off, the teat canal can remain open for some time. This means that we need to be very careful to minimize the exposure of the teat end to mastitis causing organisms at the time of dry-off. On many farms the dry-off procedure does not achieve this. As selective dry cow therapy (SDCT) becomes more common on dairies, there is an even more urgent need for dairies to properly assess the dry-off procedure and implement necessary changes to make it more successful.

Given how detailed the dry off procedure is and how critical it is for udder health and milk quality, it seems that as an industry we need to change the status quo and veterinarians need to start watching and analyzing what is happening on our dairies with the dry-off procedure. It has been eye-opening how poorly this procedure is being performed on even some of our best dairies and how much procedural drift can occur with this detailed procedure. It is important how cows are sorted and held prior to the dry-off procedure. Ideally, this procedure should minimize the stress on these cows while also minimizing the exposure to deeper manure that might splash onto teats and udders. Are cows sorted out of pens on the previous milking and all housed in one pen or are they sorted on dry-off day?

These soon to be dried off cows should be spending their time in an area with minimal manure on the floor and with clean and dry bedding. It is not uncommon that the dry-off procedure is performed at the end of a milking and that the cows to be dried off are sorted into a holding area full of manure.

Since these cows may be from multiple groups, they will re-establish a pecking order which means splashing and "fighting" leading to more manure on teats and udders. Ideally the holding area would be scraped out first prior to bringing these cows back into the parlor.

Also consider the milking units and the parlor deck which should be cleaned off and hosed down prior to beginning the dry-off procedure. Remember that dirt and manure on units, the deck, and cow's legs can easily end up on an employee's glove or the teat end of a cow during the dry-off procedure.

One of the keys to prepping the cows is to also prep the area around the cows. Ideally, cows are prepped with the normal milking routine and milked just prior to dry off.



Minimizing exposure of the teat end to mastitis causing organisms at the time of dry-off is extremely important.

In this way, the dry-off procedure begins with a clean teat and an udder that is emptied of milk.

One caution on this, though, is that for some dairies this is taken to an extreme and units are put in manual mode and every last drop of milk harvested from the cow. This overmilking leads to short term teat damage and edema accumulation towards the teat end which makes these cows very sensitive to teat manipulation which needs to happen during the dry-off procedure. This leads to cows kicking and more manure and unsanitary conditions. It is better to follow a good milking routine, so cows let down well and then allow the automatic take-off to remove the unit so less short-term teat damage is present. Also remember that for some dairies with poor teat end cleanliness prior to milking, teats will need to be re-prepped after milking before the start of the dry-off procedure. The Quality Milk Production Service of Cornell visited 15 farms in Northern New York and scored 35 employees for the treating a cow at dry-off and 24 employees for the administration of internal sealants.

The average total OSCE score for the treating a cow at dry-off was 12.4 (± 0.79) and for the administration of internal sealants was 11.4 (± 0.95) out of a total of 20 points. The scores for individuals ranged from 5 to 18 points (treating a cow at dry-off) and from 6 to 18 points (administration of internal sealants).

The largest areas of opportunity identified from the OSCEs for the treating a cow at dry-off were: massaging the product out of the teat cistern (29% correct), putting leg bands on cows (31% correct), adequately disinfecting teats (34% correct), putting on new gloves prior to starting (37% correct), and correct order of treatment (54% correct). The largest areas of opportunity for the administration of internal sealants based on the OSCEs were: putting leg bands on cows (21% correct), squeezing off the teat base during administration (25% correct), adequately disinfecting teats (25% correct), putting new gloves on prior to starting (29% correct), and partial insertion of the tip of the sealant tube

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(38% correct). As part of the NNYADP grant Quality Milk Production Service developed an interactive online training course consisting of 5 modules in English and Spanish: 1. Collecting an aseptic milk sample, 2. Administering intramammary treatment, 3. Deciding on saleable milk, 4. Treating a cow at dry off, and 5. Administering teat sealants. The goal was to keep the course simple and concise to train farm employees how to correctly execute five common and highly relevant tasks related to udder health and prudent antibiotic use. Each module had 3 sections with color coded titles of: 1. What do I need? 2. How do I do it? and 3. Why is it important?

Individual screens had a few lines of text and either a picture or an embedded video to further clarify the point. Navigation was by arrows at the bottom of the screen and included a “Menu” button to return to the home screen. Participants could choose to go through the screens interactively at their own discretion or to watch a video in which the text was read to participants as the screens were advanced. This training is available at <https://dairyoutines.jimdo.com/>.

The dry off procedure is extremely important for the udder health of cows. The veterinarians at Waupun Vet are available to monitor the dry off procedures on your farm.

Delayed Milk Ejection affects Profitability of a Farm

Dr. Paola Bacigalupo Sanguesa spoke at the National Mastitis Council conference in January. The following article is taken from her talk.

Through all the changes in the dairy industry over the last 50 years, the physiology of the cow has not changed. Specific to the milking process, the physiological requirements, and responses to achieve a milking that is efficient and gentle for the cow remain the same on delayed milk ejection. The milk ejection reflex requires tactile stimulation of the teat to signal the central nervous system to release oxytocin from the pituitary gland in the brain. Oxytocin is transported by blood from the brain to the mammary gland. Oxytocin causes the contraction of the myoepithelial cells around the alveoli, which results in the expulsion of the milk stored there to the ducts and cisterns. In addition to the tactile stimulation, the milk ejection reflex needs time to allow for the transport of oxytocin to the mammary gland and the expulsion of the alveolar milk. Meeting the stimulation and time requirements of the milk ejection reflex is crucial for an efficient milking process.

The milk ejection reflex can be impaired by different factors. When the disturbance is at the start of the milking, a bimodal milk flow or delayed milk ejection (DME) can be observed during milking. DME is the interruption between cisternal milk and alveolar milk. Depending on the level of udder filling, milk will flow for a short period of time (cisternal portion) followed by a marked reduction or even no milk flow, followed by a second increase of milk flow (alveolar portion) that continues for the rest of the milking; this is termed bimodal milk flow. In a study of 64 Michigan dairy herds, a mean prevalence of 25% of cows (range 0 to 75%) within each herd had DME during milking (Moore-Foster, et al., 2019). Similarly, during one milking in a single Michigan dairy, 302 of 663 (45%) cows had DME, of which 296 had bimodal milk flow (Erskine et al., 2019). The causes of delayed milk ejection are, lack of premilking stimulation, improper lag time from stimulation to attachment (too little or too much), stress, and stage of lactation.

The detrimental effects of delayed milk ejection can result in poor teat and udder health, lower milk yield, poor parlor efficiency, and animal welfare issues (many cows kick when the teats are exposed to high vacuum from poor

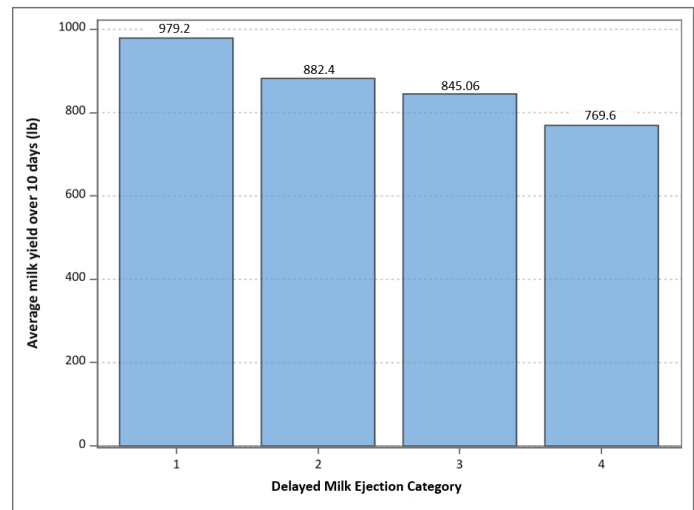


Figure 1. Average milk yield over 10 days for delayed milk ejection percentage categories

DME% 4 categories (1= 0 to 25%, 2= 26 to 50%, 3= 51 to 75%, and 4= 76 to 100%)

milk flow).

During milking, vacuum and milk flow have an inverse linear relationship, which allows the use of vacuum as a proxy to milk flow for individual cow milking recordings. VaDia vacuum recorders are portable devices that can be attached to the cluster to collect individual milking data. The devices represent a practical option for data collection: they do not interfere with the milking technician’s work nor the milking process and do not require constant supervision by the user. Once the milking records are collected, they are analyzed manually with the Vadia software and multiple metrics can be obtained for the sample, including short milk tube vacuum, mouthpiece chamber vacuum, milking machine time, and let down time (LDT). LDT can be used as to classify milkings as DME (LDT \geq 30 s) or normal

DME is a problem that can affect cows, dairy personnel, and the profitability of a farm. Reducing DME is possible and is often simple. The implementation of corrective measures must be done based on the risk factors present on the farm. It is recommended to monitor the incidence of DME to know where the farm is initially, the impact of corrective measures implemented, and ensure that goals are being met. The clinic has 2 Vadia’s that can be used to test your cows for delayed milk ejection.