Dry-Off Milk Yield and Mastitis
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An interesting article published recently in the Journal of Dairy Science looked at the relationship of milk yield at dry-off and the probability of mastitis at the subsequent calving. While the study evaluated only 116 lactations in one herd, the results suggest that a review of the practices used in many herds at dry-off time would certainly be warranted.

What the researchers found was that as the level of daily production increased at dry-off, there was a significant increase in the risk factor for both a cow and a quarter to be infected with environmental pathogens at the subsequent calving. The environmental pathogens cultured for in duplicate quarter milk samples within 3 days of calving were *Escherichia coli*, *Klebsiella* species, *Citrobacter* species, *Enterobacter* species, *Serratia* species, and species of streptococci other than *Streptococcus agalactiae*. These are the types of pathogens that cause the majority of intramammary infections (mastitis) in most herds today. Interestingly, infections caused by coagulase negative staphylococci (CNS) at calving were not associated with milk yield at dry-off. The CNS species most commonly isolated from udders are *chromogenes*, *hyicus*, and *epidermidis*.

The researchers found that for every 11 pound (5 kilogram) increase in daily milk yield above 27.5 pounds (12.5 kg) at dry-off, the odds of a cow having an environmental IMI at calving increased at least 77%. This is a shocking finding, and should get the attention of all producers. These results occurred even though all cows were routinely treated in all quarters with dry cow preparations at dry-off. There were no associations with somatic cell count at the end of lactation, days in milk at dry-off, or dry period length and IMIs at calving.

Why the tremendous increase in susceptibility to new IMIs for the higher producers? Previous research reports have shown that higher producers have a greater tendency to leak milk after dry-off, which prevented or reduced the complete formation of a keratin plug in the teat canal. Without the keratin plug to serve as a barrier, environmental pathogens had a fairly open channel into the mammary gland. Another research group found that cows leaking milk following dry-off were 4 times more likely to develop clinical mastitis during the dry period than cows that did not leak.

So, what can producers do to reduce new IMIs at time of dry-off, especially in their cows that leak milk after dry-off? I suggest the following practices be reviewed and considered:

1) reduce the dry period length to around 35-45 days – by milking higher producing cows longer, their production level should be lower when it is time to dry them off – be sure the cows are in good body condition to incorporate this practice, and don’t do it with first lactation cows – they need the extra rest time to prepare for the next lactation.
2) try to keep the facilities in which the dry cows are kept as clean and dry as possible – reduce the environmental bacteria load the teat-ends are subjected to – the type of bedding material used and bedding additives that can reduce bacteria growth should be discussed with your consultants

3) reduce water intake and offer lower quality feed to cows for the first several days after they are turned dry to reduce the intake of nutrients needed to make milk

4) removing some of the milk from the udder once a day for a few days after dry-off may be justified for certain very high producing cows to help reduce the milk leaking problem – however, remember the objective at dry-off is to keep the back-pressure in the udder high so the milk secretion process is stopped

5) apply a barrier teat dip every few days for the first 7-10 days dry and the last 7-10 days before expected freshening – these dips can provide some protection against pathogens entering the teats

6) infuse a teat sealant into all quarters at time of dry-off – ask your veterinarian or other consultant about what product(s) are available to use – continue to also infuse a dry cow antibiotic product at dry-off before infusing the teat sealant

Dairy producers should always be looking for ways to increase the productivity and profitability of their cows. Reducing the incidence of mastitis in their herds is one way to help realize these objectives. Giving extra attention to higher producing cows at time of dry-off, especially to those that leak milk, is a practice that should be incorporated into all dairy managers routines. I encourage producers to discuss the practices mentioned above with their extension agent, veterinarian, milk handler fieldman, or other competent advisor.