



# Selective dry cow therapy has merit

**T**HERE are many legislative, consumer, and advocacy groups pushing for reduced antimicrobial use in dairy production. On-farm practices involving the treatment and control of mastitis are a great place to start the conversation when it comes to prudent antimicrobial use because this area accounts for approximately two-thirds of all antimicrobial use on farms.

According to the American Veterinary Medical Association, stewardship is best defined by decisions that influence the need for antimicrobial therapy in the first place and that maintain the effectiveness of them when they are used. Because of this and public perception of antimicrobial use, we have to ask ourselves what mastitis treatment and control strategies are sustainable practices from an animal well-being and economic perspective.

## A bedrock standard

Treating every quarter of every cow with an antimicrobial at dry-off, or blanket dry cow therapy, has been an industry standard practice for a long time. Through the long march toward better udder health and preventing new infections, our industry is at a place where blanket dry cow therapy may no longer be needed. Contagious pathogens such as *Strep. ag.* and *Staph. aureus* have been eliminated or controlled in many herds. In addition, test day somatic cell count (SCC) has never been lower than it is now, as indicated by the National Dairy Herd Information (DHIA) average of 178,000 SCC in 2020 versus 304,000 in 1995.

Further, while the average quarter at dry-off had a subclinical infection when blanket dry cow therapy was introduced into mastitis control plans, current data indicates that nearly 80% of quarters are not even subclinically infected in many herds. This has brought us to a place where, in the right herds, selective dry cow therapy (SDCT) can be considered.

## Does it work?

What happened to cow health and performance in herds that used selective dry cow therapy?

In some countries like the Netherlands, a ban on preventive use of antibiotics has been in place since 2012. This includes blanket dry cow therapy. In these countries,

clinical mastitis has not spiked, milk production has not dropped, and in most herds SCC has fallen even further.

A recent USDA-funded, randomized trial enrolled seven herds from New York, Minnesota, Wisconsin, Iowa, and California, representing over 15,000 cows. The results published in the *Journal of Dairy Science* showed that selective dry cow therapy can be used without negatively affecting cow health and performance in early lactation while reducing antimicrobial usage at dry-off by 55%. This held true when farms used either a culture-based or algorithm-guided approach to using DHIA test-day data and herd clinical mastitis records.

After these encouraging results, the New York Farm Viability Institute supported the enrollment of 20 herds. These herds were monitored for about a year after beginning selective dry cow therapy. The herds used the algorithm-based approach for differentiating between high-risk cows (treated with an intramammary antibiotic) and low-risk cows (not treated with an intramammary antibiotic, only a teat sealant).

The herds enrolled were able to achieve between 70% and 100% compliance. The farms observed either a reduction or no change in bulk tank SCC and a drop or no change in new infection risk in the fresh period.

## The financial impact

How about the cash flow differences in those herds?

In an economic optimization of selective dry cow therapy in the Netherlands, the authors of a *Journal of Dairy Science* manuscript concluded, "Economics is not an argument against reduction of dry cow antimicrobials by applying selective dry cow treatment."

In the first investigation of the economics of selective dry cow therapy in the U.S., the investigators from the previously mentioned USDA study applied data from those seven herds to an economic model. They showed an average benefit of \$7.85 per cow dried off for selective dry cow therapy when compared to blanket dry cow therapy.

These herds were already on DHIA testing and used dairy management software, making it easy to implement the algorithm for making the dry-off lists for treating with antimicrobials or not. In a 1,500-cow herd, the financial impact would be over \$10,000 annually. In that same study, researchers also showed that using specially designed culture plates for deciding which cows

to treat returned, on average, \$2.85 per cow dried off.

From data in that study and experiences in other herds, we don't expect any negative impact on udder health. Furthermore, a sensitivity analysis in the *Journal of Dairy Science* manuscript reported partial budget analysis of culture- and algorithm-guided selective dry cow therapy and indicated that selective dry cow therapy is quite cash flow robust to changes in udder health.

A phone app that estimates the cost of dry cow therapy approaches and the difference of selective dry cow therapy from blanket dry cow therapy, as well as more detail on appropriate herds to consider such an approach, can be found at: [on.hoards.com/selectivedryoffcosts](http://on.hoards.com/selectivedryoffcosts).

An additional study, recently published in the *Journal of Dairy Science*, modeled the dry cow therapy choices of California herds. That study concluded that for all scenarios, blanket dry cow therapy was more expensive than selective dry cow therapy. That study also noted that complete removal of antibiotics at dry-off is not as economically efficient at selective dry cow therapy and represents an animal well-being issue due to increased clinical mastitis in the subsequent lactation.

## The best candidates

What herds can make this work?

Selective dry cow therapy is not right for all herds. Characteristics of herds that would be good candidates for selective dry cow therapy include:

- Those that already have successful mastitis control programs (as evidenced by bulk tank SCC regularly being less than 250,000)
- No evidence of *Strep. ag.* in the herd, and *Staph. aureus* infections are maintained at a low incidence and not spreading
- Excellent technique at dry-off
- A well-maintained facility for dry cows

Involvement of the Veterinarian of Record (VoR) in devising mastitis treatment protocols through systematic standard operating procedures (SOPs) will facilitate adoption of SDCT. Included in this SOP should be routine use of teat sealants at dry-off administered by diligent and properly trained staff. Good hygiene and excellent technique must be used at all times. Monitoring of subclinical and clinical mastitis through DHIA testing and clinical mastitis detection allow systematic dry-off lists to be easily produced, as well as observing udder health changes in a timely manner.

Are there tools to help implement selective dry cow therapy?

If you are on DHIA test and keep mastitis records, there is commercial herd management software that allows you to implement the algorithm based on information from the U.S.-based trial. You can also customize the algorithm to make it more stringent if you are risk averse to missing the opportunity to use antibiotics for a dry-cow. The software will generate a list of cows that should be dried-off and will automatically identify those animals at high risk of having a subclinical infection.

These high-risk cows should be on a protocol developed by the farm's VoR to get an antibiotic and teat sealant, while those animals at low risk should get a teat sealant only. Your veterinarian can help get this set up and can work with you to monitor program compliance and any impact on bulk tank SCC and clinical mastitis.

If your herd has good udder health and meets the criteria above or detailed in the phone app, consider using the software tools with your VoR to set up selective dry cow therapy. Adopting selective dry cow therapy in well-managed herds not only saves the farm money, but also helps our industry be a leader in prudent antimicrobial use. 🐄

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