

CONSENSUS STATEMENT DRY COW THERAPY

Bradley¹ A., De Vliegher² S., Farre³ M., Jimenez⁴ L.M., Peters⁵ T., Schmitt-van de Leemput⁶ E., van Werven⁷ T.

¹QMMS and University of Nottingham, UK; ²Ghent University, Belgium; ³SEGES, Denmark; ⁴Servet, Spain; ⁵MBFG Wunstorf, Germany; ⁶Vetformance, Villaines la Juhel, France; ⁷Utrecht University, The Netherlands

Abbreviations

ADCT
Antibiotic Dry
Cow Therapy

CM
Clinical Mastitis

DHI
Dairy Health
Improvement
(individual SCC
testing on farm)

SCC
Somatic
Cell Count
(*1000/ml milk)

TS (internal)
Teat Sealant

PREAMBLE

This document is the result of a workshop held on 21/02/2017 in Wiesbaden, at the invitation of Boehringer Ingelheim. The recommendations in this paper are based on the opinions and experiences of the authors, all experts in the field of bovine mastitis.

The aim of the workshop was to find a consensus on the circumstances under which we would recommend treatment of cows with ADCT, when we should not do so, and when the use of an internal TS is advised. The objective of such a consensus statement is to optimize the prudent use of antibiotics while respecting animal health and welfare and taking into account risk management for every cow and herd.

The purpose of the consensus statement is to

- Provide dairy producers and veterinary practitioners guidance on the use of ADCT, selective ADCT and TS in practice
- Offer veterinary practitioners a reference for their recommendations and so give them confidence in moving away from blanket ADCT
- To emphasize the responsible use of antibiotics at the time of drying off

CONSIDERATIONS

For a long time, administration of intramammary antimicrobials at dry off in each quarter of each cow (blanket ADCT) was advocated as an important measure in mastitis management. Blanket ADCT has been a cornerstone of both the “Five Point Plan” (National Institute for Research into Dairying; NIRD, UK, ^[1]) and the more recently developed “Ten Point Plan for Mastitis Control” [National Mastitis Council, ^[2]]. The dry period is a crucial period for the cow, with a high risk of new intramammary infections. Moreover, existing infections treated during the dry period have a higher chance of cure compared to treatment during lactation ^[3]. Therefore, blanket ADCT has been a widely used tool for prevention and treatment of intramammary infections during the dry period and, consequently, blanket ADCT successfully contributed to the control of (sub)clinical mastitis in the next lactation ^[4].

At present, there is much debate on the emergence of antimicrobial resistance and on prudent antibiotic use in human and veterinary medicine. In this context, the use of blanket ADCT is sometimes questioned. Firstly, the concept of “preventive” use of any antibiotic is under scrutiny.





Secondly, politicians and regulators are focusing on the overall reduction of the consumption of antibiotics in animal production. Although the dairy sector compared to other livestock systems uses relatively few antibiotics, it should also comply with responsible use concepts. The majority of antibiotic use in dairy herds is related to udder health, of which a significant proportion is dry-cow products. Therefore, replacing blanket ADCT by a strategy of selective ADCT can significantly contribute to the reduction of antibiotic consumption on a dairy farm [5],[6].

Compared to the time when the “Five Point Plan” was developed (1960’ies), much progress has been made in milk quality in general and in the control of contagious mastitis more specifically [4]. (Sub)clinical mastitis rates decreased and fewer cows suffer from udder infection at the time of dry off [7]. Also, new insights on specific zootechnical challenges and needs in the dry period contributed to the improvement of general immune status and udder health of dry cows. As a result, in many jurisdictions, contagious mastitis is now well controlled, changing the emphasis of ADCT use from cure to prevention [4].

Research emphasizes that, despite this progress, the dry period still plays an important role in the epidemiology of mastitis. Especially during the early and late dry period, cows can easily become infected [8]. As a consequence of these infections, cows get more CM during lactation, which not only compromises animal welfare but also may increase the infection pressure on farm and the use of curative antibiotic mastitis treatment [9]. So, clearly, there is a need for a firm strategy against new intramammary infections during dry off at each dairy farm. However, besides ADCT, internal TS also proved to be very effective in preventing new infections during the dry period by providing a physical barrier to invading micro-organisms [10]. For the above reasons, a more selective use of ADCT is often advocated and guidelines for implementation of blanket ADCT, selective ADCT and internal TS are necessary. Not every region/country is as well advanced in the implementation of responsible antimicrobial use principles. In some countries, blanket ADCT is prohibited by legislation or by dairy processors, while other regions are leaving more freedom to the individual herd owners and veterinarians. Moreover, the farming conditions in certain regions may differ considerably, allowing for some difference in approach between countries. This consensus statement tries to take these differences into account and gives recommendations that are in principle applicable to every herd in every country. Of course, this does not mean that this statement has either the ambition or the intention to overrule any local legislation.

This consensus statement provides guidance, but dairy producers, with the appropriate advice of the veterinarian, should be the final decision makers on any given farm.

CONSENSUS STATEMENT

- We recommend administering an internal TS, at drying off, to all cows, on all farms
- Those animals that are likely to be infected need to receive ADCT in addition to TS
- At the herd level, farms should be ‘classified’ as “low risk” or “high risk” with regards to udder health and the approach on these farms should be different
- Ultimately every herd is suitable for selective ADCT. “High-risk herds” should go through a process of engagement and improve overall management and udder health. We believe that veterinarians should aim to guide their clients through this first step. See figure 2 for an example of Good Dry Cow Practice Guidelines
- Veterinarians should ensure training of the farm staff on selective ADCT and the appropriate and hygienic application of internal TS

High risk herds

Definition of high risk herds

1 Farms with a bulk SCC of >250.000 cells/ml (at least 2 months out of last 6 months)

2 Herds with a problem of *S. agalactiae*

- ▶ Bulk SCC rising (above 250,000 cells/ml)
- ▶ + presence of *S. agalactiae* confirmed
- ▶ + an open herd

3 Exceptional unavoidable specific risk period (e.g. personal/personnel issues impacting the farm, new building, installation of a robotic milking system, etc.)

- In these herds, the first priority should be to improve udder health and management during both lactation and during the dry period
- Selective ADCT can be implemented in such herds, however any recommendation to abandon blanket ADCT should be taken with care and a full assessment of risks versus benefits
- It may be prudent to continue blanket ADCT until udder health has improved. Blanket ADCT should be only one piece in the recommendations; attention should also go to (but not necessarily limited to) milking routine, housing conditions of the cows, nutrition, milk machine maintenance, internal biosecurity and other changes in management with the intention to improve udder health





Low risk herds

- In these herds, veterinarians should strive to actively switch producers from blanket ADCT to selective ADCT
- Switching to selective ADCT should be done mindful of the farms' targets. Thresholds to select cows may be changed based on changes in the farm's udder health parameters (e.g. bulk tank SCC is rising or falling) and management factors such as the frequency of DHI testing
- Special attention needs to go to the producers' motivation to switch to selective ADCT and the motivation of his entire team
- In these herds, cows that are likely infected with a major pathogen should be treated with ADCT in addition to TS. Possible ways to define cows that are likely infected with a major pathogen could be (but not limited to), a positive bacteriological culture, an SCC above a given threshold or a positive PCR result

Definition of low risk herds

Farms with a bulk SCC of <250,000 cells/ml (at least 4 months out of the last 6 months)

Proposed thresholds to indicate cows are likely infected with a major pathogen

We propose the following thresholds to indicate that cows are likely infected with a major pathogen and should be considered as candidates to be dried off with ADCT in addition to the TS. We understand individual SCC is only a proxy for intramammary infection, yet the information is easy at hand. In some countries, the identification of a pathogen may be required before treatment with ADCT is allowed. We do not oppose to this as a decision criterion, but we believe individual SCC is a more broadly available tool to decide

- Cows that are > 200,000 cells/ml on at least one of the last three test days before dry off. The last test day needs to be scheduled within the 4 weeks before dry off in order to have optimal information
- Cows with CM within the time frame of the last three test days before dry off. Careful recording of CM cases is essential to make sure this can be taken as a decision criterion

- ▶ If using the last three test days is not available, one could take a decision based on the last test day only. This test day should be within 4 weeks before dry off. In this case, we recommend to lowering the threshold to 100,000 cells/ml milk to maintain approximately the same level of sensitivity
- ▶ Thresholds may vary based on the results of the farm (e.g. a decrease of individual cow SCC thresholds is advised when bulk tank SCC is rising; an increase may be contemplated if the bulk tank SCC is stable or falling). In any case, we recommend cows with an SCC >250.000 should be dried off with ADCT

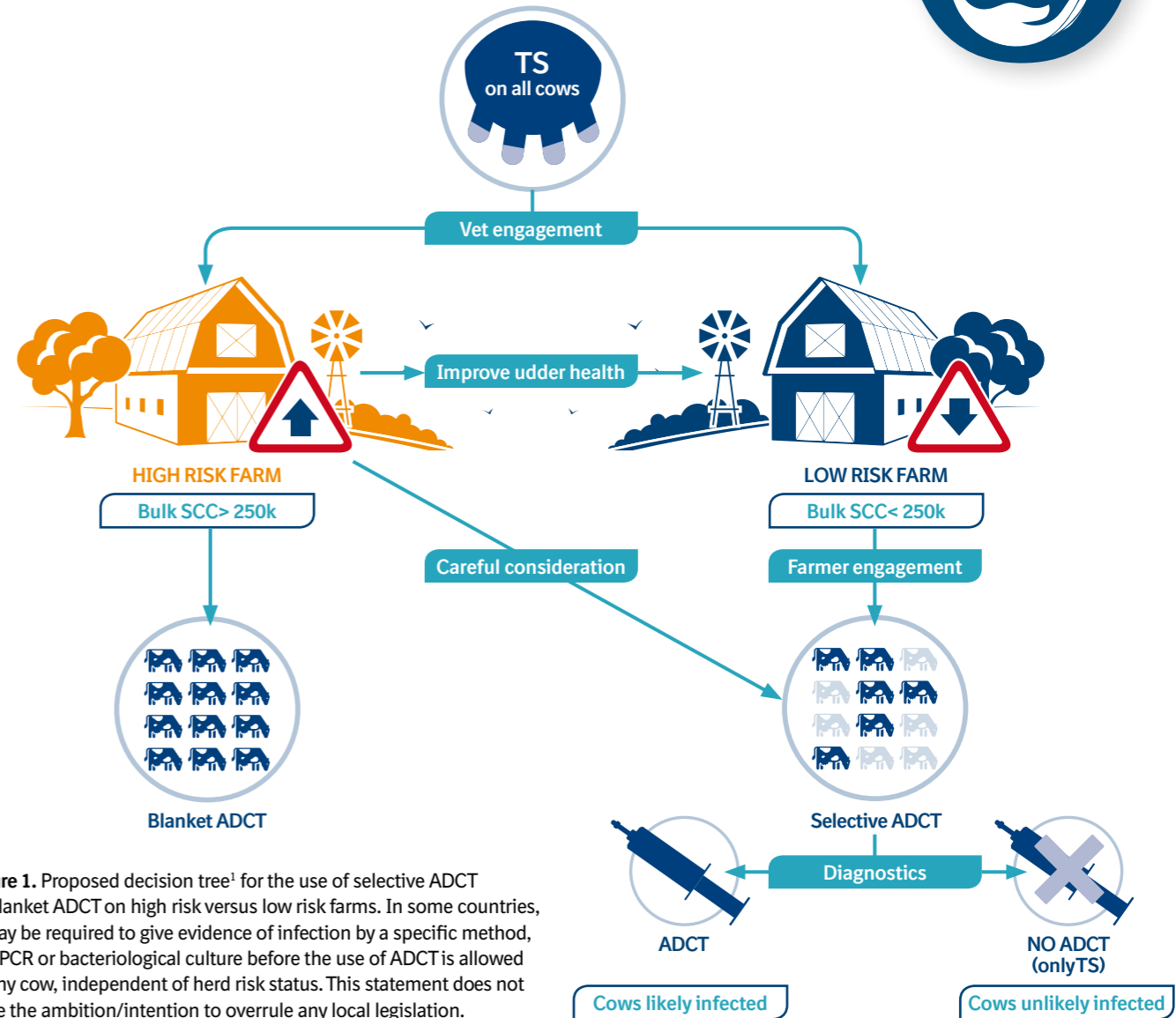


Figure 1. Proposed decision tree¹ for the use of selective ADCT or blanket ADCT on high risk versus low risk farms. In some countries, it may be required to give evidence of infection by a specific method, e.g. PCR or bacteriological culture before the use of ADCT is allowed in any cow, independent of herd risk status. This statement does not have the ambition/intention to overrule any local legislation.

	DRY OFF	INVOLUTION	STEADY	TRANSITION	CALVING
Nutrition, management & housing	Max. 12 kg milk/day	Optimized body condition			Max. 1 point change in body condition
	Hooftrimming	Nutrition well balanced in proteins and energy and completed with vitamins and minerals			
	Clean, dry housing. Avoid stress and overstocking				
Medication	Ectoparasiticide				
	Ectoparasiticide				Prevention ketosis
	Vaccination (BVD, calf diarrhea)				
Diagnostics	TS (+ ADCT)				
				Ketosis	Ketosis
	SCC (Bacteriology)				Vit E/ Selenium

Figure 2. Overview of important attention points during dry and transition period.



APPENDIX: MONITORING TOOLS

The following tools can be used to

- Advise on management improvements before instituting selective ADCT
- Monitor the success of selective ADCT
- Adjust thresholds for the use of ADCT, depending on the farm's target
- Decide on which dry cow tube to use

Data capture

The following data can be useful for evaluating the status of udder health on farm

- Bulk milk SCC
- Individual SCC through DHI testing, preferably every 4 weeks
- Accurate and complete CM records
- Certain number of bacteriological cultures of the farm with data on sensitivity to antimicrobials for the relevant pathogens. Interesting cases to sample are
 - ▶ Cows with CM in early lactation
 - ▶ Cows with repeated cases of CM
 - ▶ High SCC at the end of lactation
- When no DHI testing is available
 - ▶ Perform a single SCC at dry off (treat on a low threshold) and monitor with CMT after calving
 - ▶ Instigate DHI testing
- Milk yields at drying off and milk yield loss in the next lactation

Goals and thresholds

With these tools, following goals and thresholds can be defined to improve or benchmark a farm's dry period udder health status

CM records

Definition

The proportion of cows affected by CM (on one or more occasions)

Goal

Below 25% per year

Definition

Rate of CM in the first month of lactation

Goal

Less than 8% of cows affected by CM in first 30 days

Dry period cure rate

Definition

Cows going from >200,000 cells/ml to <200,000 cells/ml between the last recording before dry off and the first one after parturition

Goal

Above 80%

Dry period new infection rate

Definition

Cows going from <200,000 cells/ml to >200,000 cells/ml between the last recording before dry off and the first one after parturition

Goal

Below 10%

Percentage of cows going into dry period infected

Definition

As defined by an SCC > 200,000 cells/ml at the last recording before dry off

Goal

Below 20%



References

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