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IDF

# ANIMAL HEALTH REPORT

Research progress | Global insights | Expert opinion

CASES STUDIES

## Prudent Use of Antimicrobial Agents in Dairy Production

### "UN General Assembly High-Level Meeting on Antimicrobial Resistance 2024"

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# PREFACE

## MESSAGE FROM THE IDF DIRECTOR GENERAL

Welcome to a new edition of the IDF Animal Health Report. IDF values the work of veterinarians and other experts that work relentlessly to care for the animals that provide us with this unique liquid, milk. There is a strong correlation between animal health and better environmental performances of our sector, we are therefore committed to continue to bring the latest science and best practices to the forefront.

This edition is dedicated to the best practices in AMR within the dairy sector. Based on the One Health, we look at the actions from a holistic perspective, bringing together human, animal and environmental health. With the aim of enhancing the support we have provided to our membership for decades on this topic, while being a recognized knowledge partner for several IGOs working in this field, IDF is actively participating at the United Nations General Assembly High Level Meeting on AMR, contributing to the international efforts to tackle it through its science-based expertise.

Science informs us that one of the best ways to address AMR is through disease prevention. By focusing on prevention, the sector has reduced the need for antibiotics in livestock farming and driven the prudent use of antibiotics in cattle. This progress demonstrates the commitment of our sector to safeguard both animal health and public safety while maintaining high standards of milk and dairy production.

In this edition of the IDF Animal Health Report you will find successful case studies of AMR management from different regions of the world, with the aim of sharing knowledge, expertise and best practices on this matter which has become one of the most urgent challenges that the international community faces in its transition to the future.

Through comprehensive guidelines, we continue to empower stakeholders across the sector to make informed decisions that prioritize health and safety. Therefore, IDF will soon publish the updated version of the 'Guide to Prudent Use of Antimicrobial Agents in Dairy Production'. The guide is the result of the research taking place in the field, which is also producing methodologies and innovative technologies, some of which are discussed in the present issue and offer new opportunities to further optimize animal care, minimize the reliance on antimicrobials, and promote the One Health concept above mentioned.

It is essential that the design and implementation of these actions involve all key stakeholders—farmers, veterinarians, academics, and competent authorities. Only by working together can we ensure that best practices are not just adopted, but also continuously refined and adapted to meet the evolving needs of the sector.

Together, we are building a future where dairy health and welfare thrives in harmony with responsible antimicrobial stewardship.

Laurence Rycken
*Director General, International Dairy Federation*

# VETERINARY OVERSIGHT

The use of veterinary or animal health paraprofessionals in the oversight of antimicrobial use.

GERMANY

# CHALLENGES IN IMPLEMENTING QUARTER-SELECTIVE DRY COW THERAPY ON COMMERCIAL DAIRY FARMS

**CORRECT SAMPLING AS WELL AS GOOD MANAGEMENT ARE NECESSARY TO IMPLEMENT DRY COW THERAPY BASED ON DETECTING MASTITIS PATHOGENS.**

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## THE PROJECT MINIMA PROPOSES THE TARGETED USE OF ANTIBIOTICS

During the last years, the development of antibiotic resistance has attracted public and political attention on strategies reducing antibiotic use. There is great potential to save antibiotics by using selective dry cow strategies. Currently, such strategies are mostly based on somatic cell count of cow composite milk, often regardless of the infection status of the individual quarters. As a result, antibiotics are often used in quarters not requiring such treatment. To achieve a more targeted antibiotic use, the project "MinimA" focused on a pathogen-based quarter-selective dry cow therapy (QSDCT) treating only quarters infected with major pathogens with antibiotics at dry-off.

The aim was to test whether a QSDCT, which had already been successfully tested at two experimental farms (Knappstein and Barth, 2016), could be transferred to the field and to identify emerging challenges.

## TREATMENT BASED SOLELY ON DETECTED PATHOGEN

Sixteen dairy farms (3 organic, 13 conventional) with 80 to 1 280 cows were included in the field study. Two weeks prior to dry-off, farm personnel collected quarter milk samples (60 to 83 cows per farm) for bacteriological analysis. Results were used for treatment decisions: Only quarters infected with major bacterial pathogens were treated with antibiotics at dry-off. In addition, all quarters received an internal teat sealant to prevent new intramammary infections. To share knowledge and challenges during implementation of QSDCT, feedback talks as well as project meetings based on the stable school concept (Ivemeyer et al., 2015) were conducted.

> "The farmer's mind is where quarter-selective dry cow therapy begins."
>
> Alexandra Beckmann

## CHALLENGES

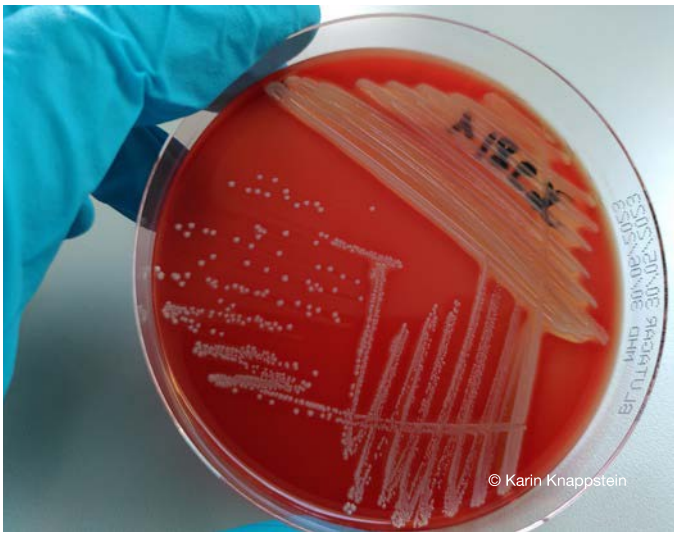
Less than 10% (2.6 – 28.8% at farm level) of all quarters received antibiotics at dry-off. One of the biggest challenges was antiseptic sampling. Farmers were trained using leaflets, videos and personal instruction. The use of a pre-dip improved sample quality. In addition, wet cleaning of sample vials was identified as an unexpected source of contamination. A high degree of self-organisation and precision work provided the best conditions for correct identification of quarters both during sampling and treatment, and ensured that the time schedule from sampling to drying off was adhered to.

## SUPPORT OF QSDCT WITH A GUIDANCE DOCUMENT

The experience and results of this study provide an approach for other commercial dairy farms to target antibiotic therapy and avoid prophylactic use. All project farms have significantly reduced their use of antibiotics. However, there are challenges to this approach. The obstacles encountered by the farmers and the solutions implemented have been summarised in a German practical guide and can serve as a reference for other farms interested in implementing QSDCT in their herds.

## LONG-TERM EFFECTS ON AMR AND HEALTH NEED TO BE STUDIED IN THE FUTURE

Given the need for selective dry cow strategies and the recent development of antibiotic benchmarking tools, QSDCT is a promising way for farmers and veterinarians to reduce antibiotic use. Due to the increased time and organisational effort required for sampling, further analysis is needed on criteria to preselect cows for sampling with the highest chance of detecting infections by major pathogenss. In addition, more work is needed to assess the long-term effects of reduced antibiotic use on the development of antimicrobial resistance in mastitis pathogens and on the health and performance of treated cows. There were also frequent questions on the economic impact of pathogen-based QSDCT which still needs to be calculated.



## REFERENCES


1. Knappstein, K., and Barth, K.. (2016). Effect of dry cow treatment strategies based on quarter specific diagnosis - potential for reduction of antibiotic consumption. 6th IDF International Mastitis Conference, Nantes, France.
2. Ivemeyer, S., Bell, N. J., Brinkmann, J., Cimer, K., Gratzer, E., Leeb, C., March, S., Mejdell, C., Roderick, S., Smolders, G., Walkenhorst, M., Winckler, C., & Vaarst, M. (2015). Farmers taking responsibility for herd health development—Stable schools in research and advisory activities as a tool for dairy health and welfare planning in Europe. Organic Agriculture, 5(2), 135–141. https://doi.org/10.1007/s13165-015-0101-y


## MORE INFORMATION (IN GERMAN LANGUAGE)


1. Beckmann, A., Barth, K., Knappstein, K. (2023): Viertelselektives Trockenstellen: Antibiotikaeinsatz nachhaltig reduzieren. Empfehlungen aus der Wissenschaft und Erfahrungen aus der Praxis. Ratgeber. Thünen-Institut für Ökologischen Landbau, 48 p, https://doi.org/10.3220/MX1689668102000, https://literatur.thuenen.de/digbib_extern/dn066642.pdf
2. Leaflets and videos for the correct sampling and application of udder injectors: https://bit.ly/MinimA.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