



D4Dairy

Digitalisation, Data integration, Detection and Decision support in Dairying

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Project

Type of project: D4Dairy, 01.10.2018 – 30.09.2022, strategic, multi-firm



ACTIONS TO REDUCE ANTIMICROBIAL RESISTANCE

NEW TOOLS DEVELOPED TO SUPPORT PRUDENT USE OF ANTIMICROBIALS

The problem addressed

The transmission of antimicrobial resistance (AMR) between animals, their environment, food and humans is a complex issue. High levels of antimicrobial use (AMU) are considered to be associated with the emergence and high prevalence of resistant bacteria.

A previous study in Austria had already shown that antibiotics are quite frequently used on dairy farms, although at relatively low levels. For the treatment of mastitis, a common disease in dairy cows, beta-lactams and cephalosporins were most frequently used, the latter of which are classed as highest priority critically important antimicrobials by the World Health Organization (WHO). Several factors have already been identified as being associated with a reduction in the risk of mastitis and consequently the need for AMU: regular access to pasture, automatic milking machine shut-off, and access to feed immediately after milking. In

contrast, effects, which were likely to increase the probability of mastitis occurring included increasing number of lactations (i.e., age) and several other farm management factors.

The progress achieved

Proper diagnosis is the key for selecting the most appropriate antimicrobial for the treatment of mastitis. In D4Dairy, harmonised and standardised methods for susceptibility testing of mastitis pathogens were developed, tested and implemented. Furthermore, the newly established data interface for the electronic transfer of test-results into the central cattle database gives immediate access to data and allows for efficient future evaluations. Resistance profiles have also been made available to farmers and vets in the herd manager software of the Austrian milk recording organization.

SUCCESS STORY

Reduction of antimicrobial use can also be achieved by identifying the cows requiring treatment during the dry period. Data from a variety of sources were used to develop a decision support tool for the drying-off strategy of a dairy herd.

Finally, to overcome the identified impact of feeding waste milk (containing residues from the treatment of lactating cows with beta-lactam-antibiotics) to calves, a promising strategy to reduce exposure to antimicrobials through waste milk was developed and tested in experimental studies. Proof of concept in field studies is ongoing.

Impact and effects

The tools developed will support the prudent use of antimicrobials, as they will reduce the frequency and amount used and support more targeted selection of antimicrobial treatments. Overall, this will reduce the selective pressure on the bacterial flora in dairy cattle, calves and their environments. The efficacy of tools developed in D4Dairy to reduce antimicrobial use and mitigate the spread of antimicrobial resistance in dairy farming will be investigated further.

Project coordination (Story)

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Project partners



This success story was provided by the consortium leader and by the mentioned project partners for the purpose of being published on the FFG website. D4Dairy is a COMET-Project within the COMET – Competence Centers for Excellent Technologies Program and funded by BMK, BMDW, Vienna and Lower Austria. The COMET Program is managed by FFG. Further information on COMET: www.ffg.at/comet