Assessing the Irish dry period in light of upcoming European Regulations

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Suzanne Naughton MVB explores the implications of new European Regulations for veterinary practice in relation to the dry period and mastitis control in 2022

Mastitis is still an important contributor to the high culling rates, treatment costs and milk production losses we face as a profession on many farms around the country today. Regardless, significant progress has been made in attempting to curtail the negative effects of mastitis and improve overall control of the disease at a herd level. This has been helped by our national mastitis programme 'Cell Check' which has put considerable effort into raising awareness around mastitis prevention and maintaining focus on udder health as a key production target. This progress is clearly seen by the fall in the average bulk milk tank somatic cell count results over the last 10 years, from a high of 272,000 cells/ml in 2009 to approximately 178,000 cells/ml in 2020.

IMPORTANCE OF THE DRY PERIOD

The importance of the dry period to the overall lactation cycle and mastitis control is well-known. Simply put, this period gives cows the opportunity to rest and recharge ahead of the next lactation. Optimal management of the dry period in dairy cows is generally considered pivotal in the control of mastitis on farm. The first two weeks and the last two weeks of the dry period are when cows are most susceptible to infection. Data shows that intramammary infections present at dry-off or those acquired during the dry period are associated with increased risk of clinical mastitis within the next lactation. This can correspond to over 60 per cent of clinical mastitis in quarters in which the same pathogen was identified during the dry period occurring within two weeks of calving and 90 per cent within 150 days of calving.

Correct management of cows approaching drying off and a surgical standard of hygiene regarding the procedure itself are critical to ensure a successful dry period. However, inadequate housing facilities and management of dry cows throughout the rest of this period can quickly reverse any of the good work done at the start. This can be a common hurdle many farms falter at. The cold, wet weather, which often coincides with the time of year we dry off most of our dairy cows, does not help matters either. Damp, wet and poorly maintained environments provide the perfect breeding ground for bacteria such as *Streptococcus uberis* and *E. coli.* Maintaining cows in these environments allows an unnecessarily high exposure, increasing the risk of infections developing, putting an increased pressure on any treatment which may have been administered at dry off. Other equally important factors such as ensuring 1:1 cow cubicle ratio, good ventilation and optimum nutrition all contribute to the period of rest and recuperation that these cows require and need.

With the European regulations coming into effect in January 2022, attention will turn to how we prescribe and use antibiotics to prevent and treat diseases across the veterinary sphere. In dairy cows, attention will focus on blanket dry cow therapy (BDCT), a protocol where an intramammary antimicrobial is given to all cows at drying off regardless of infection or not. This BDCT approach goes against a fundamental component of the incoming regulations whereby antibiotic use must be justified. Antibiotics should be prescribed based on anti-microbial resistance and epidemiological data as well as the clinical knowledge of each farm under the attending veterinary practitioner's care. This will attempt to put an end to the routine use of antibiotics in dry cows.

A study carried out by Professor Simon More in 2017 looking at the trends in intramammary antimicrobial usage on Irish dairy farms from 2003 to 2015, estimated national dry cow coverage in 2015 was 1,022 defined course doses per 1,000 cows per year. This corresponded to the estimated national coverage of dry cow therapy, which had been close to 100 per cent over the six years of that study. In recent years, emphasis has been put on moving away from BDCT in light of the significant improvements on many farms in terms of udder health and the requirements of the incoming European regulations as discussed above.

SELECTIVE DRY COW THERAPY

A selective dry cow therapy (SDCT) programme involves administering an internal teat sealant only to a selected proportion of suitable cows at drying off, with the remainder of cows receiving both an appropriate dry cow antibiotic tube and an internal teat sealant.

Most farms in Ireland still use a BDCT protocol. However, many farms have already moved, or are considering a move to the SDCT protocol once the recommendations outlined by Cell Check have been met. A significant barrier to farms meeting this approach is a lack of milk recording data which is one of the pre-requisites for a move to SDCT. Approximately

45 per cent of herds in Ireland milk record, meaning a large cohort of farms do not have the adequate data available to make decisions at cow level and move forward with a selective approach. The availability of these data is essential to garner a thorough understanding on the incidence and patterns of mastitis in a herd. Regardless of whether a herd owner decides to implement an SDCT approach or not, milk recording should be encouraged on all farms which still do not use this essential tool. Even though SDCT of only infected cows is a more sustainable approach, choosing animals for treatment is not always straightforward. The effect of SDCT compared with BDCT on udder health, antimicrobial usage, and economics is influenced by the SCC criteria used to select cows for DCT.

Another area to consider with the incoming legislation is the prescription of intramammary antibiotics at dry off. On farms where milk culture and sensitivities are carried out as standard, an antibiotic must be chosen from the lowest category possible on the EMA Antimicrobial Advice Ad Hoc Expert Group (AMEG) list that has been shown to be effective, given knowledge of previous sample results. On farms where milk culture and sensitivity information are unavailable, it is recommended that an antibiotic is chosen from the 'EMA Category D: Prudence' category. Antibiotics in this category which are available in Ireland include some from the beta-lactams group such as cloxacillin or cloxacillin/ampicillin combinations.

Preparations containing cloxacillin only are inactive against gram-negative bacteria and so teat sealants must be used to prevent introduction of gram-negative bacteria from the environment throughout the dry period in herds where this is a known risk. A meta-analysis of studies involving herds conducting SDCT without a teat sealant showed an elevated risk of disease in herds conducting SDCT compared to BDCT. Unfortunately, there were insufficient studies conducted to complete a similar meta-analysis to identify differences between BDCT and SDCT where teat sealant was used.

HERD BACTERIOLOGY RESULTS

A complete understanding of the herd's previous bacteriology results is essential to ensure the correct antimicrobial is prescribed and used. Without these data, the risk of an increase in new infections after drying off may be elevated when a narrow spectrum intramammary antibiotic tube is used, particularly if there are any inadequacies concerning the environment and housing that these cows are managed in.

It has been shown that SDCT based on results obtained by an on-farm culture system achieved the same level of success with respect to treatment and prevention of intramammary infections over the dry period as BDCT and did not affect the risk of clinical mastitis in the first 120 days of the subsequent lactation.

SDCT: THE DUTCH EXPERIENCE

An SDCT approach has been mandatory in the Netherlands as part of government guidelines to restrict the development of antimicrobial resistance since late 2012. Although, there were issues on individual farms after implementing SDCT

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initially, in general the national bulk milk tank SCC did not go up after farmers adopted an SDCT approach. The transition from mainly BDCT to SDCT in the Netherlands resulted in a reduction in the number of antimicrobials used on dairy herds without having a deleterious effect on udder health during the dry period. Much research carried out in the Netherlands post-introduction of these restrictions has consistently highlighted the importance of management measures to help balance the limited use of antimicrobials at dry off with good udder health during the dry period.

For Ireland to emulate the success of our Dutch counterparts, significant work must still be done to improve dry cow management and accommodation throughout the dry period as well as emphasising the need for all farmers to use regular milk recording as standard. The upcoming restrictions will put pressure on many farmers around the country to move to an SDCT approach, many of whom might not be fully ready for this move. Sub-optimal decision-making combined with inadequate facilities and management could put cows at significant risk of disease. However, it is hoped that the new legislation might help fuel further engagement with the attending veterinary practitioner around the prescription of antibiotics on farms as well as more involvement with general health and management decisions, particularly concerning the dry cow.

It is only a few years ago that every cow in Ireland received an antibiotic at dry off. This is changing. However, we cannot put our dry cows at elevated risk in the process of moving to a selective dry cow approach. The advice from the Federation of Veterinarians in Europe on SDCT is valuable and captures the essence of the multi-factorial nature of care that is required in this move; treatment only has to be done on the basis of clinical history of mastitis in the previous lactation, suspicion of intra-mammary infection by an individual cell count and/or a positive bacterial milk culture including isolation and preferably antimicrobial susceptibility testing (AST) and individual cow or farm risk factors (e.g., damaged teats).

References available on request.