

# Future Vet Congress review: mastitis treatment and parasite control

**Leon Duffy BAgSc DVM Cert DHH, Boehringer Ingelheim Animal Health vet adviser, reports on two of the key topics featured at the company's recent 'Future Vet – Cattle Practice 2021 and Beyond' virtual congress: udder health and mastitis treatment; and parasite control in a changing regulatory environment**

There is no doubt that the global pandemic is impacting vet-farmer day-to-day working practices, and that the veterinary landscape in Ireland is changing at an unprecedented rate. It was against this backdrop that Future Vet delegates heard from various speakers on wide-ranging large-animal topics. First up for review here, is mastitis control and treatment on dairy farms.

## DECISION-MAKING

Internationally renowned mastitis expert, Peter Edmondson addressed the challenges of decision-making around mastitis management when information is limited. His advice was to get out onto the farm, examine the system, ask questions and break things down. Is the mastitis of dry-period or lactational origin? Is the pathogen contagious or environmental? An easy first step is to assess the somatic cell count (SCC). Herds with a low SCC of around 120,000 cells/ml are unlikely to have a significant contagious mastitis problem; clinical mastitis is more likely to be caused by environmental pathogens such as *Streptococcus uberis*, *Escherichia coli* and other coliforms eg. *Klebsiella spp.* Infection with a coliform can produce a range of clinical signs: 1% of cows develop severe toxic mastitis; 10-15% of cows show systemic signs and have a swollen udder; and finally, 85% of cows have mild mastitis. Peter explained that a high percentage of cows in the latter category will self-cure. Even in more severe cases, the bacteria may have been eliminated from the udder early in the course of the disease; the clinical signs result from the ongoing effect of bacterial endotoxin. Peter then discussed the approach to investigation in herds with a SCC of over 200,000 cells/ml. In these herds, the causes of mastitis can be divided into major pathogens: *E. coli* and other coliforms, *S. uberis*, *S. aureus*, and *Streptococcus agalactiae*; and the minor pathogens coagulase negative Staphylococci, *Corynebacterium bovis* and *Streptococcus dysgalactiae*. The incidence of *S. aureus* and *S. agalactiae* has decreased due to the implementation of strategies to limit spread of contagious pathogens. Using milk-recording data to review SCC by lactation number can provide an indicator of pathogen. *S. aureus* infection typically occurs in older cows

while high SCC in cows across lactations may indicate *S. agalactiae* or *S. uberis* infection. Poor dry-cow therapy cure rates are associated with *S. uberis* and *S. aureus*, while *S. agalactiae* infections show a better response.

The overriding message of this presentation was that, with a practiced approach, vets can support farmers to get a better understanding of the dynamics of mastitis infection in their herds.

## NARROW-SPECTRUM TREATMENT

Next, Dr Thomas Manske, technical services manager for Boehringer Ingelheim, based in Sweden, shared his experience of mastitis control and the use of narrow spectrum treatment. As in Ireland, the dairy industry in Scandinavia has seen dairy-herd numbers decrease while the herd size has increased. In Sweden, the frequency of mastitis treatment has decreased consistently, and virtually no third and fourth generation cephalosporins are used. Approximately 91% of cows with mastitis receive penicillin G, 7.3% receive a sulphonamide and 1.5% are treated using a fluoroquinolone.

Thomas discussed how technical and practical considerations have influenced this picture. In Sweden, the Gram-positive bacteria *S. aureus* (23%), *S. uberis* (19%) and *S. dysgalactiae* (17%) represent over 50% of the mastitis pathogens isolated. The minimum inhibitory concentration (MIC) of penicillin for each of these bacteria is typically low, and penicillin resistance is rare. Although the use of penicillin for mastitis treatment has increased significantly since the 80s, the prevalence of resistant strains of *S. aureus* remains low and has in fact decreased during this time. Thomas attributed this trend to the widespread use of culture and sensitivity, and prompt culling of cows infected with beta-lactam resistant strains.

Practical considerations also influence treatment choice and once-a-day treatment with penicillin is viewed positively by farmers. Thomas concluded that penicillin intramammary treatment worked well as a first-line treatment on Swedish farms and this is supported by the return of treated cows to pre-mastitis milk yields and high clinical cure rates following penicillin treatment.

To complete the evening's discussion, the Boehringer Ingelheim-developed mastitis therapy checklist was introduced. The checklist and the accompanying guidance are a tool for vets to use alongside farmers to aid decision making around mastitis treatment. Many factors influence the chances of treatment success; the use of this checklist ensures a systematic approach to treatment review allowing appropriate improvements to be made. The checklist can be split into three parts:

- Ascertain current protocol with the primary focus on the treatment of the first clinical case in a cow's lactation. Any modifications for repeat or severe cases are then added;
- Review and revise the protocol by referring to the



**Figure 1: Break down the mastitis conversation – is the origin dry period or lactation?**

accompanying notes to identify the optimal treatment plan tailored to the farm's needs; and

- Summarise, print and display new treatment protocol in the parlour for all staff members to visualise on a regular basis. Finally, the whole treatment protocol should be reviewed and revised on a regular basis, alongside analysis of the mastitis origin and a review of preventative measures.

**PARASITE CONTROL**

The topic of parasite control honed in on the veterinary profession's response to the regulatory changes to the prescribing of anthelmintics from January 2022. Setting the scene, Professor Eric Morgan discussed why vets need to support their farmers to move away from unsustainable worming practices towards integrated, targeted parasite control.

The main driver for change is the development of resistance and research has shown that there is anthelmintic resistance to benzimidazoles on 90% of sheep farms, alongside increasing resistance to macrocyclic lactones.<sup>1</sup> Similarly, a recent survey found resistance to ivermectin on all 16 Irish cattle farms monitored.<sup>2</sup>

Although resistance is defined as a faecal egg count reduction of under 95% following treatment, in many cases reductions of 70% and 80% are still seen. It's not until efficacy reduces to 60% or 50% that a reduction in livestock productivity becomes evident, but by then the problem is more difficult to address. This is why routine post-treatment efficacy monitoring is so important. Overuse of anthelmintics in youngstock contributes to the emergence of resistance but may also be changing the epidemiology of nematode infections because frequent suppressive treatments can affect the development of immunity to worms. This was highlighted by a recent publication which documented a shift in the profile of lungworm cases diagnosed by veterinary laboratories in the UK. Since 1960 the total number of cases has increased, and the proportion of cases diagnosed in adult cattle has risen significantly to represent around a third of all diagnoses made.<sup>3</sup>

**TREATMENT**

Climate change, resulting in hotter, drier summers, and milder, wetter winters, is also changing the epidemiology of some parasites; highlighting the need for season-specific, and farm-specific parasite control. Targeted treatment strategies can reduce selection for resistance and help preserve refugia. Parasites follow the 80:20 rule: 20% of cattle within a group contribute 80%

of the worms. By selectively treating these animals and leaving a proportion of the group untreated, it is possible to increase the sustainability of control while maintaining the health and productivity of the group.

Kieran O'Mahony from Glen Vets in Co. Tipperary then shared his experiences of increasing engagement with farmers on parasite control and discussed the services and diagnostic support developed within the practice to facilitate this. The planned change in classification of anthelmintic products from licensed merchant (LM) to prescription-only medication (POM) will necessitate greater involvement of vets in parasite control. This brings opportunities since vets are well placed to educate farmers on responsible use of anthelmintics and to position parasite control as an integral part of herd-health planning. Finally, UK-based consultant, Owen Atkinson spoke about motivating clients to change their approach to parasite control. Effecting on-farm change is not a quick process, and it can be frustrating when time is invested in addressing a problem, but no action gets taken. A shift in communication style may help remedy this.

Information is much more widely available than it used to be. Farmers are influenced by friends, neighbours, experience and education, but also through the internet, discussion groups, consultants, farming press, and books, and not just by the advice of their vet. There is a place for a directive approach, where we 'tell' the farmer something, but as vets we need to recognise that there are other ways. A more consultative approach can encourage the farmer to come with you on the journey, to solve the problem together.

There are a number of behaviour change models that can be adopted to encourage farmers to make difference choices, but behaviour is also influenced by intuition. Certain decisions, such as when to treat for parasites and what product to use, may be driven by habit and not subject to significant reflection or review. This type of behaviour is much more difficult for vets to influence.

In order to facilitate change, it is important to start at the beginning of the cycle and influence decision-making by asking open questions, fully understanding the problem, the motivation for change and then seeding ideas and solutions. Approaching these challenges from a place of curiosity will help obtain a better understanding of what the farmer is doing, why and how they arrived at that decision. This provides an opportunity to plant new ideas, share experiences, and start to shift the farmer's mind-set over time.



**Figure 2: Cattle farmers need to move away from unsustainable worming practices towards integrated, targeted parasite control.**



**Figure 3: Overuse of anthelmintics in youngstock can affect the development of immunity to worms, such as lungworm.**