

## NSAID Use on NZ Dairy Farms

### Aim

To better understand veterinary prescribing patterns and farmer attitudes and behaviour towards non-steroidal anti-inflammatory drug (NSAID) use in NZ dairy cattle.

### Introduction

Routine use of NSAIDs, often concurrently with other therapies (e.g. antibiotics, fluid and/or metabolic therapy) is everyday practice in veterinary medicine.

Animal welfare studies have highlighted the wellbeing aspects of preventing and controlling pain in cattle<sup>1,2,3,4,5</sup>. As a prey species, cattle are genetically primed to be stoic (not show weakness or pain). However, that does not mean that cattle feel any less pain than other (less stoic) species.

Pain occurs via several mechanisms including swelling and loss of function caused by inflammation, and direct nerve pathways involving the pain mediator bradykinin. This is the mechanism by which something painful is significantly more sensitive to pain (e.g. a lame cow is more sensitive to hoof surgery than a sound animal). Hence it is always optimal to prevent pain from occurring rather than treating pain after it has occurred, for instance via pre-treating with NSAIDs prior to surgery or disbudding.

Reducing inflammation, when this response to cell damage restricts normal behaviour (e.g. through excessive swelling, high fever, etc) is helpful for faster recovery than would occur without intervention. Treating inflammation and pain effectively can lead to improved productivity, most likely due to animals returning to normal grazing (and other) behaviour more rapidly.

NSAID use in dairy cows is influenced by many factors<sup>6,7</sup>. The items most cited by farmers included experience in the industry, their role within the farming business, and farmer engagement with veterinarians. There was a broad understanding of the role of NSAIDs in improving animal welfare and reducing pain and inflammation. Other potential benefits of using NSAIDs appeared less well known.

Ultimately, use of NSAIDs in dairy cattle helps with cow, farm and NZ industry sustainability. Optimising cow health improves her longevity in the herd<sup>8</sup>. More farmer education regarding the role of NSAIDs in cattle health, wellbeing and productivity will help with greater uptake (and therefore animals returning to full health and productivity more quickly). Healthy herds are a source of pride for farmers and are likely to result in long-term success for their farmer.

The NZ dairy industry supplies food products globally and local cattle farming practices will continue to receive increased scrutiny as consumers have access to more (sometimes prejudiced and/or false) information. Having an industry focussed on cow and farmer wellbeing, in addition to cow health and productivity, places NZ in a stronger and more sustainable position.

### Results

A recent survey<sup>9</sup> involving rural NZ veterinarians was undertaken. Findings included the following list of conditions commonly encountered on NZ dairy farms where adding a NSAID treatment would likely be beneficial to the cow:

- Mastitis (especially moderate to severe cases, where there is obvious swelling and heat and / or the cow is 'off-colour')
- Calving difficulty / assisted calvings (including caesarean section)
- Down cows – often cows down due to musculoskeletal injury can be treated with appropriate nursing including NSAID use
- Lameness and prior to use of hoof knife
- Metritis and retained foetal membranes (especially when the cow is 'off-colour'; i.e. in conjunction with antibiotic treatment)
- Respiratory infection in cows and calves (including viral infections)
- Calf scours
- Calf disbudding

It was noted that veterinary authorisations are often not comprehensive in relation to NSAIDs for cattle, with typically just a limited number of the above indications listed in most farm RVM purchase authorisations.

Farmer survey and market research information suggests that only 20% of dairy cattle that would likely benefit from NSAID treatment actually receive this treatment.

National sales data<sup>10</sup> indicates that approximately 350,000 'cow treatment doses' of suitably registered NSAIDs are sold annually. This is only around 20% of the calculated number of treatments in Figure 1 oveleaf. The analysis shows a significant underuse of NSAIDs in NZ dairy cattle compared to doses required for optimal health, wellbeing and productivity.

Indication for NSAID treatment	Typical cases (per annum)	Cases in herd
Mastitis	10%	500,000
Difficult calving (farmer assisted)	5%	250,000
Down cows	1%	50,000
Sick cows	3%	150,000
Lameness	15%	750,000
	<b>Total cow cases</b>	<b>1,700,000</b>
Calf disbudding	100%	1000,000
Sick calves	5%	50,000
	<b>Total calf cases</b>	<b>1,050,000</b>
Potential NSAID use in dairy cattle	<b>Total cow equivalent doses</b>	<b>1,805,000</b>

Figure 1. Analysis of national usage data for NSAIDs in dairy cows. This excludes vet NSAID treatments on-farm.

The assumptions for this analysis are five million dairy cows and 20% heifer replacements each year. Disease incidence assumptions are shown above, with calculations based on 'cases' receiving NSAID treatment and assuming a 500kg cow and 50kg calf.

Survey data highlight several reasons for a discrepancy between what could be considered 'best practice' and actual NSAID usage:

1. Farmer knowledge and education about the role of NSAIDs in treating diseases, conditions where a benefit would be likely
2. Farmer and veterinarian beliefs regarding pain and related treatment in dairy cows, especially what is deemed painful
3. Farmer and veterinarian demographics with younger and female participants more likely to use and prescribe NSAIDs than older, male, experienced people
4. Return on investment data following NSAID treatment is limited for some indications. Even where ROI information is available (e.g. calf disbudding and mastitis) this data is not always well known by farmers
5. Limited indications for NSAIDs cited on the RVM authorisation list

There is significant opportunity to improve cow health and wellbeing in the national dairy herd. This begins with veterinary education of farmers and authorisation of appropriate NSAID therapy for farmers to administer on-farm. Opportunities for farmers to improve profitability and farm sustainability also exist, along with improved recovery by treated cows.

## Summary

Data from NZ shows that NSAIDs are currently underutilised in the dairy industry. It is to the benefit of cattle, dairy herds, farmers and the NZ industry to improve uptake of these products. By improving cow health there is a wellbeing benefit as well as productivity improvement. Finally, optimal health, wellbeing and productivity all lead to long-term sustainability and the industry's ability to respond to consumer pressure and ultimately thrive.

## References

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- <sup>9</sup> AgriHealth NZ, 2016. Data on File
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