## SURVEY OUTLINE

Antimicrobial resistance (AMR) is perceived as one of the biggest threats facing the world. Despite this, very little research has been conducted to discover how this is affecting antimicrobial treatments used in the NZ dairy sector.

In New Zealand, the biggest area for antimicrobial use is in the area of mastitis. Because of this, Tim Cameron and Winston Mason (from PureMilk and VetEnt Research) wanted to identify and compare what treatments were being recommended for use on farm, what treatments were actually being used on farm and why these treatments were being used. Plus, a comparison of vets and farmers thoughts and beliefs around AMR was sought in order to discover how AMR influences the decisions that are made.

In order to explore these questions, a SurveyMonkey survey was developed and distributed through specific veterinary clinics to vets, and their dairy farmer clients. The survey was also advertised on various social media platforms.

Two separate surveys were developed, the first was distributed to vets and the second to dairy farmers. A total of 193 farmers completed the survey, along with 68 veterinarians.

A representation of farmers from a range of regions and herd/farm sizes across the country was captured, along with a mix of geographical areas, clinic sizes and a wide range of experience with the veterinarian participants.
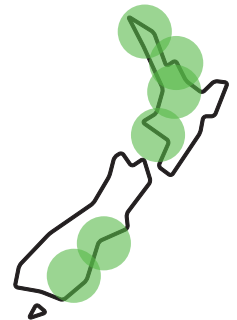
Right: Map illustrating the region distribution of participating farmers and vets.

TREATMENTS AND WHY

One of the key objectives in carrying out the survey was to obtain some visibility around treatments being used on farm.

Farmers were asked which three mastitis products they commonly used over the calving period, whilst vets were asked which three mastitis products they most commonly recommended over the calving period, Figure 1 illustrates the results.

The first finding is that there isn't perfect agreement between what vets are recommending or prescribing, and what farmers are using on farm. Compared with farmers, vets are recommending a smaller range of treatments (the majority of which are penicillin G-based) compared with farmers who are using a wide range of treatments, with cloxacillin-based and tylosin-based treatments common.

FIGURE 1: Products used vs Products recommended – calving mastitis

This graph shows the most commonly used (farmers) or recommended (veterinarians) lactational mastitis treatments for calving mastitis. Vets were asked to select three products; farmers were able to select as many as they wanted, but most only selected one product.
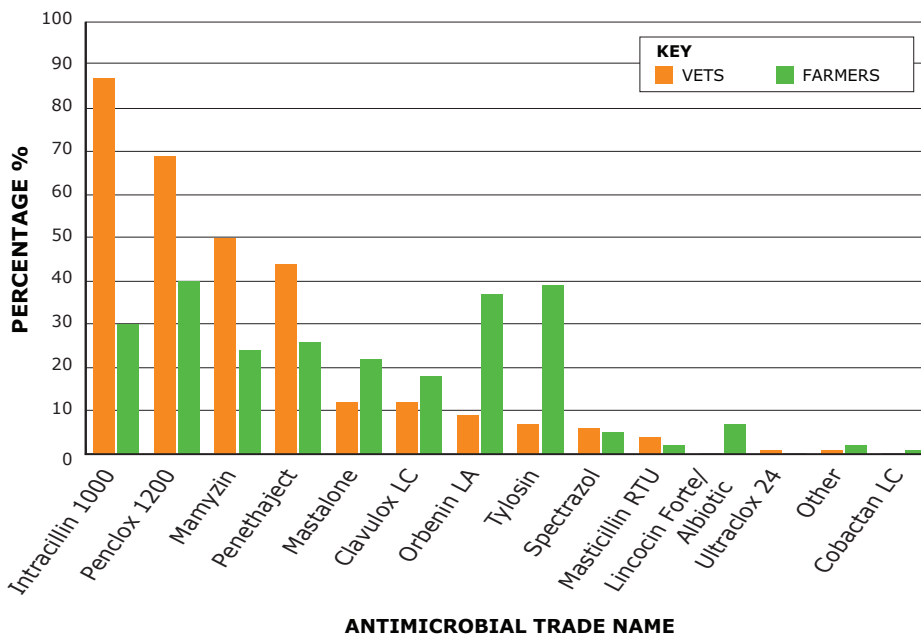
FIGURE 2: Products used vs Products recommended – mid-late lactation mastitis

This graph shows the most commonly used (farmers) or recommended (veterinarians) lactational mastitis treatments for mid-late lactation mastitis. Veterinarians were asked to select three products; farmers were able to select as many as they wanted, but most only selected one product.
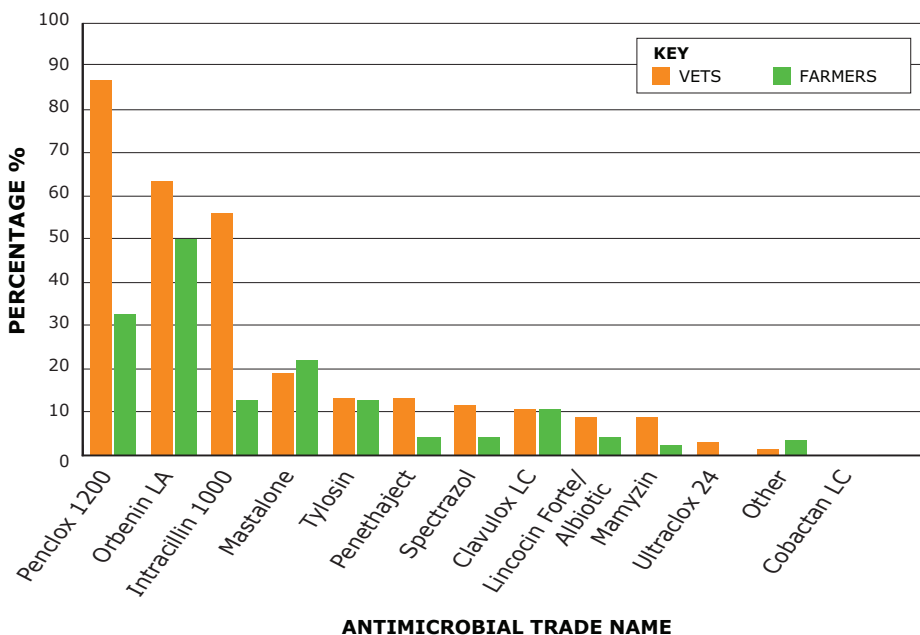

Figure 2 is the result of a similar question, related to what treatments are used/recommended over the mid-late lactation period.

There appears to be a trend of vets prescribing more cloxacillin-based products along with penicillin-G forming the bulk of recommendations. However, farmers appear to use fewer products during this part of the season, compared to around calving, with only 4 to 5 products being used by more than 10% of the farmers surveyed - farmers are using a smaller range of treatments in late lactation.

Farmers were asked why they chose these treatments and the most common reason stated was due to a vet recommendation. This is an interesting finding, as we can see by the graphs that there is a gap between what is being recommended and what is being used, which highlights an opportunity for communication to be improved between vets and farmers.

Vets were asked why they recommended these treatments, with 72% identifying that these treatments were recommended around calving because they are the most effective against *Streptococcus spp*. However, in mid to late lactation, only 33% of veterinarians identified this as the reason for treatment recommendations - this is despite data that shows *Streptococcus spp.* are the most common pathogens throughout lactation, including mid-late lactation periods[1,2].

Other common reasons for vet recommendation were that they are the most appropriate treatment for the farm and that they appear to work well. Also, it is surprising to note that only 40 and 46% of vets (depending on the stage of the season) recommended treatments based on individual farm culture and sensitivity results.

Interestingly, the price and withhold period of the treatment were considered the least important factors by both vets and farmers.

Both vets and farmers predicted between 80 - 85% clinical cure rates with treatment and were asked for their feedback on the most likely cause of treatment failure - both groups identified the type of bacteria and cow age/history as the two main factors.

Vets ranked treatments not being administered correctly as the third most likely reason for treatment failure, whilst farmers ranked this as the least likely reason for treatment failure.

This demonstrates that vets are concerned with how treatments are being administered by farmers on farm, and this is possibly justified, as only 34% of farmers involved in the survey identified that they disinfected teats prior to insertion of intramammary products – an apparent area for improvement.

ANTIMICROBIAL RESISTANCE

The second section of the survey asked vets and farmers questions about the impact of antimicrobial resistance (AMR) on both veterinary and farming businesses.

Firstly, farmers were asked if they had heard of AMR. 98% responded that they had, with vets confirmed as the main source of information for over 90% of farmers. Farmers were also asked if they had heard of the traffic light system, however only 2/3 had heard of this method of categorising antimicrobials into green, orange and red based on their importance - despite 93% of vets stating that they actively promote the traffic light system to their clients.

Vets and farmers were then asked to rate the importance of AMR to them on a scale of 0 to 100, as illustrated in Figures 3 and 4.

Both groups had the same median value of ranking how important antimicrobial resistance was to them. However, double the proportion of farmers ranked AMR importance as an extreme concern to them, compared to vets.

Vets were also asked for their impression of how important AMR was to their farmer clients. Interestingly they rated their clients' concern as a median of 50/100 when the actual median was 80/100, which shows that the vets surveyed are underestimating how important AMR is to their clients. Vets practising for less than 10 years ranked AMR as much higher importance, than vets practising for more than 10 years.

Vets were also asked for their opinion on the most important factors that they believed could contribute to the reduction of the threat of AMR (Figure 5), with some interesting results. 91% of vets thought avoiding antimicrobials of critical importance was an important factor, with 68% considering prioritising green over orange antibiotics as important. Only 50% of vets considered reducing the usage of dry cow therapy antibiotics as one of their most important factors - an interesting finding, considering the recent industry push to reduce blanket dry cow therapy.

As is illustrated in Figure 5, the other factors and less complex diseases such as lameness were considered to have a smaller impact on the threat of antimicrobial resistance.

FIGURE 3: Importance of AMR to vets

Scale 0-100, where 0 is not important at all, 100 is extremely important.
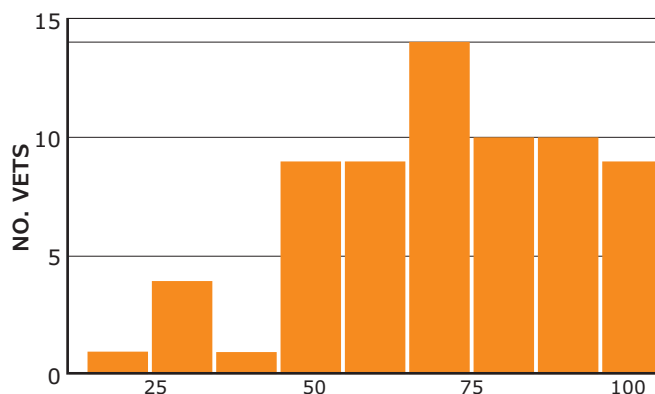

FIGURE 4: Importance of AMR to farmers

Scale 0-100, where 0 is not important at all, 100 is extremely important.
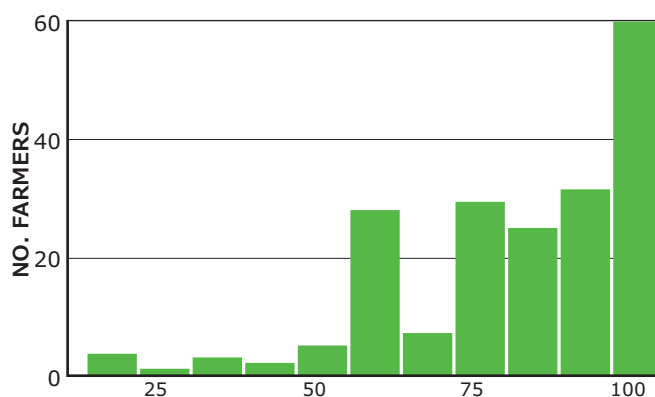

FIGURE 5: The most important factors identified by veterinarians to help reduce the threat of AMR

Each responder could select their three most important factors.

VARIABLES	PERCENTAGE
Avoiding antibiotics of critical importance	91%
Prioritising green over orange antibiotics	68%
Reducing the usage of dry cow therapy	50%
Route of administration of antibiotics	28%
Reducing antibiotics in lameness	25%
Other	22%
Reducing antibiotics in clinical mastitis	13%
Using the shortest practical course of antibiotics	13%

CONCLUSIONS

Based on vet and farmer responses within this survey, there appears to be a discrepancy between what vets are recommending or prescribing and what farmers are actually using for mastitis treatment throughout the season.

Farmers in the survey appeared to have a good base knowledge of antimicrobial resistance, having heard about it via their veterinarian, and have a vested interest, ranking it as extremely important to their farming business.

Vets in the survey appear to have underestimated the importance of antimicrobial resistance to their farmer clients.

Collectively these findings highlight the importance of communication between the veterinarian and farmer, particularly around understanding the traffic light classification system.

TO FIND OUT MORE

To learn more, head to http://bit.ly/mastitis_survey to watch a video of the survey results, produced in conjunction with Research Review, or speak to your Virbac Area Sales Manager.

REFERENCES

1. Bryan MA, Hea SY, Mannering SA, Booker R. Demonstration of non-inferiority of a novel combination intramammary antimicrobial in the treatment of clinical mastitis. New Zealand Veterinary Journal 64, 337-42, doi:10.1080/00480169.2016.1210044, 2016.

2. M. Clews, A. Kenyon, K. Johnston, S. Oehley, H. Pike, K. Taylor, K.Wyatt, L. Durel. Proceedings of the 2018 International Bovine Mastitis Conference.

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