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In this issue:

- > *Bacterial colonisation in ovine footrot*
- > *Sustained internal parasite control in beef heifers*
- > *Long-acting pre-lambing anthelmintic treatments*
- > *Clinical mastitis in sheep*
- > *Nutrition for lactating ewes*
- > *Complex septicaemia in calves after IM vaccination*
- > *Sub-clinical mastitis in sheep*
- > *Antimicrobial prophylaxis for abdominal surgery in periparturient cows*
- > *Colostrum for neonatal calves*
- > *Unchecked selenium deficiency in a beef herd*

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to read previous issues of Sheep and Beef Research Review

Independent commentary by Andrew Roe. Andrew has worked in a Southland mixed practice for over 25 years.

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Welcome to the seventh issue of Sheep and Beef Research Review.

The content in this issue is split evenly between the ovines and bovines. Ovine highlights include clinical and sub-clinical mastitis and the nutritional management of lactating ewes while bovine highlights include sustained internal parasite control in beef heifers and the importance of colostrum for neonatal calves.

We hope that there is some practice-changing research for you in this issue and look forward to receiving your comments and feedback.

Kind regards

Andrew Roe

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Research Review thanks MSD Animal Health for their sponsorship of this publication, and their support for ongoing education for animal health professionals.

Ovine footrot: new insights into bacterial colonisation

Authors: Maboni G et al.

Summary: This study investigated the colonisation of *Dichelobacter nodosus*, *Fusobacterium necrophorum*, and *Treponema* species in biopsies from the interdigital skin of healthy, interdigital dermatitis (ID), and footrot-affected feet of sheep. Biopsy samples (n=241) were collected post-slaughter and analysed using real-time PCR to determine the prevalence and load of the different bacterial species. The highest prevalence and load of *D. nodosus* were found on feet with ID. Almost all of the samples contained virulent *D. nodosus*. Some samples contained both virulent and benign *D. nodosus*.

Comment: Sheep practitioners in most regions of NZ probably do not regard ovine footrot as a particularly important condition in their patch. However, for those working in the main fine wool producing areas of the South Island, where footrot would be ranked as one of the most important production limiting diseases for their clients, this paper, by Swedish and UK researchers, may be of interest. In an attempt to learn more about the colonisation of the causative organisms in the pre-clinical stages of the disease, the feet of over 240 sheep were sampled post slaughter at a UK abattoir. The feet were first categorised into four groups; healthy, mild interdigital dermatitis (ID), moderate/severe ID, and footrot (where under-running of the hoof was present). Tissue biopsies were then collected and analysed by PCR for the presence of *D. nodosus*, *F. necrophorum* and *Treponema* species.

The findings support previous studies that demonstrated that *D. nodosus* is the primary cause of ovine ID, while *F. necrophorum* (which was found at high levels only in the footrot group) plays a role in the progression to footrot. What is interesting, however, is that while *D. nodosus* was found in 80–100% of feet with ID lesions present, it was also isolated from nearly 60% of the healthy feet. Moreover, nearly all of these isolates were deemed to be the virulent strain of the bacteria. For ovine footrot, as with many other conditions in animals, the presence of the causative organism is clearly just one factor that determines the presence or absence of clinical disease.

Reference: *Vet Rec.* 2016;179(9):228

[Abstract](#)

Congratulations to Anna Martyn

who won a \$500 Visa Prezzy Card by taking part in our recent Subscriptions Update promotion. Anna is a Senior Veterinarian from Atkinson & Associates Veterinary Services, Piopio.



Sheep & Beef Research Review

Post-weaning growth of beef heifers drenched with long- or short-acting anthelmintics

Author: Eppleston J et al.

Summary: The objectives of this Australian study were to determine: (i) whether the drenching practices of beef producers using short-acting anthelmintics limit the post-weaning growth of heifers; and (ii) whether a single weaning treatment with a long-acting anthelmintic improves post-weaning growth. Starting at weaning, 20/100 heifers in each of five herds were injected four times at 90-day intervals with long-acting moxidectin to suppress gastrointestinal nematodes. In the first year, the balance was drenched using the owner's usual commercial practice with short-acting anthelmintics (5 herds) or left undrenched (1 herd). In the second year, the balance was drenched with long-acting moxidectin within 3 months of weaning (4 herds) or with short-acting drenches only (2 herds). In the first year, suppressed heifers were significantly heavier than the undrenched and short-acting groups by 3 and 6 months' post weaning, and by 12 months they were 40kg and 28kg heavier, respectively. In second year, the live weight of the suppressed and long-acting heifers did not differ, but by 3 and 6 months both groups were significantly heavier than the short-acting group and by 12 months they were 22kg heavier.

Comment: This paper, looking at the benefits of sustained internal parasite control in young cattle, is quite timely given the recent availability in NZ of a 125 day-acting abamectin capsule. In Australia, where the study was carried out, a long-acting moxidectin injectable product is registered for cattle, which has a claim for 112 days' activity against Ostertagia. While several regimens were looked at over the two-year study, the one of most practical relevance was a comparison of a single injection of this product with repeated doses of an oral anthelmintic, the standard drenching regimen employed in the region. Beef heifers were used, with the treatment starting at weaning. By 12 months of age, the heifers given the long-acting moxidectin injection were 22kg heavier than their counterparts receiving the oral drenching, implying that continual elimination of incoming worm larvae gives additional benefits over the standard practice, which is largely aimed at minimising the accumulation of adult internal parasites. I will leave you to debate the pros and cons of this approach from an anthelmintic resistance viewpoint. You will be pleased to know, however, that here in NZ, the abamectin capsules are sold with a BZ/levamisole-priming capsule to mitigate some of the resistance concerns.

Reference: *Aust Vet J.* 2016;94(9):341-6

[Abstract](#)

Comparison of the production effects of two different long acting pre-lamb treatments in poor conditioned twin bearing ewes

Authors: Bingham C

Summary: This single-site negative-control comparative productivity study demonstrated that treating poor-conditioned twin-bearing ewes with a long-acting anthelmintic agents pre-lamb resulted in a significant increase in the average bodyweight of both ewe (3.5Kg) and lamb (2.6Kg).

Comment: Clive Bingham, veterinary technical advisor with Zoetis, is a regular contributor at our conferences and those of us who have heard him speak will know that his presentations are typically clear and concise and of a practical nature. This paper, assessing the targeted use of long-acting pre-lambing anthelmintic treatments is no exception. With the concerns around the development of anthelmintic resistance that surrounds these products, we are encouraged to advise our clients to move away from routine whole-flock treatment and, instead, just target those animals most likely to benefit. While this makes sense in theory, how well does it work?

Clive answers this question beautifully. The "high risk" animals in his study were mixed-age twin-bearing, poor-condition (average CS of 2) ewes, with two long-acting options being compared with the control (no treatment). Both groups of treated ewes had gained more weight by weaning than the untreated animals and, in addition, their lambs were heavier too. Previous work in this area, published last year, looked at whole-flock treatment across a number of farms with the conclusions and recommendations being largely based on the potential return on investment. Because there was a wide range of results between the farms in this study, the message to farmers was potentially confusing. Clive's study, on the other hand, portrays a very clear message: strategic use of long-acting anthelmintics can be very worthwhile.

Reference: *Proceedings of the Society of Sheep and Beef Cattle of the New Zealand Veterinary Association*, pp 41-44, Jan 2016

[Abstract](#)

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Sheep & Beef Research Review

Clinical mastitis of sheep – causes, prevention and treatment

Author: Barber S

Summary: This paper provides an overview of clinical mastitis in Australasian sheep, common causes of the disease and the impact on farm productivity, profitability, and animal welfare. Current treatment and control strategies as well as future directions for control of this disease are also covered.

Comment: In the [June issue](#) of Sheep and Beef Research Review, we looked at several papers on sheep dairying presented at this year's conference of the NZ Society of Animal Production. With sheep dairying set for a rapid period of expansion, the NZSAP thought it was timely to include a couple of sessions on the topic at the conference.

The Sheep and Beef Cattle special interest branch of NZVA followed suit with a number of papers included at their event in June. The scene was set with a presentation by Peter Gatley of Maui Milk who gave an overview of the industry. Then it was into the clinical stuff with this paper by Stuart Barber from the Melbourne vet school, sharing Australian experiences on the topic of clinical mastitis in sheep. Not only dealing with causes and treatment, but also covering productivity and welfare aspects, the paper will serve as an excellent overview of the subject for anyone with sheep dairy clients. And for the rest of us regular sheep vets, it is a valuable reference as we all field the occasional request for help and advice with ovine mastitis and its after effects.

Reference: *Proceedings of the Society of Sheep and Beef Cattle of the New Zealand Veterinary Association, pp 27–29, Jan 2016*

[Abstract](#)

Nutrition and management of lactating ewes in New Zealand

Authors: Peterson S

Summary: This review discusses the nutrition of lactating ewes in NZ. Lactation is an expensive physiological state and dairy ewes that are lactating require approximately 5-fold as much energy as a dry ewe. Lactating sheep, especially dairy sheep and those with multiple lambs, should be fed at luxury levels.

Comment: Although this excellent review paper, by IVABS researcher Sam Peterson, continues the sheep dairy theme, the general principles covered are equally relevant to conventional sheep farming systems. With weaning weight of lambs (kg lamb weaned/ewe) being an important determinant of the profitability of our sheep breeding and finishing operations, maximising milk production is important in all ewe flocks. As Sam explains in his introduction, a lot of the literature on the subject can be confusing as much of the work has been done overseas. His objective was to provide a simplified story, relevant to our animals and farming systems. In my opinion, he succeeds at delivering on this aim, with an extensive coverage of the topic, divided under the following main headings:

- Milk yields of ewes
- Energy requirements of lactating ewes
- Calculating feed requirements
- Supplements.

He also looks at how lamb rearing systems affect milk yield and profitability on sheep dairy farms.

Reference: *Proceedings of the Society of Sheep and Beef Cattle of the New Zealand Veterinary Association, pp 15–26, Jan 2016*

[Abstract](#)

Streptococcus bovis/S. equinus complex septicemia in a group of calves following intramuscular vaccination

Authors: Clarke LL et al.

Summary: This case study from the US describes how *Streptococcus infantarius subsp. coli*, which is a member of *S. bovis/S. equinus* complex, was associated with a cluster of calves that died after injection with a modified live viral vaccine. Within 12 hours of the vaccination of 46 calves, four calves had died, three calves were ill, and one unvaccinated cow was dead. Autopsies on the cow, two dead calves, and one affected surviving calf revealed similar gross anatomic and microscopic lesions. Gram-positive cocci were present in lung and skeletal muscle vasculature. *S. infantarius subsp. coli* was cultured from tissues and the vaccines used on the affected animals but not from vials used on unaffected animals.

Comment: This eye-opening case study is an excellent reminder to keep a very open mind when investigating cases of suspected adverse events. When we are called out to look into livestock deaths following the administration of animal health treatments, most of us (I know I would!) understandably assume the culprit to be the product in question, especially if it contains an active ingredient recognised as having the potential to cause adverse reactions, such as abamectin, levamisole, or copper. Not so in this article. Seven out of 46 calves were affected, four of them dying. Autopsies revealed gross lesions, with signs of septicaemia identified histologically. The clincher, however, was the culture of the same strep species (a faecal organism) from both the vial of vaccine used and the tissues of the affected animals, pointing to contamination of the vaccine as the cause of the problem!

Reference: *J Vet Diagn Invest. 2016;28(4):423–8*

[Abstract](#)

Did you know that?

- The majority of subscribing vets read at least half of Sheep and Beef Research Review, and 61% read all or most of it
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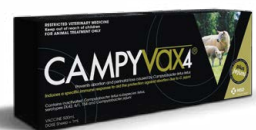
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100%

of farms have toxoplasmosis present.

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of farms have campylobacter present.



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Sheep & Beef Research Review

Sub-clinical mastitis of sheep-causes and prevention

Authors: Barber S

Summary: This paper provides an overview of sub-clinical mastitis in sheep, common causes of the disease, its impact on sheep production, and current and suggested future strategies for its control.

Comment: Unlike Stuart's first paper, this one is perhaps of less relevance to practitioners not directly involved with sheep dairy operations because subclinical mastitis is not something that can be feasibly diagnosed or controlled in conventional sheep farming flocks. However, just as in dairy cows, subclinical mastitis in ewes can be a significant challenge in the sheep dairy industry, potentially having an impact on lifetime lactational performance, not to mention milk quality. This paper is, therefore, another essential read for anyone with sheep dairy clients.

Reference: *Proceedings of the Society of Sheep and Beef Cattle of the New Zealand Veterinary Association, pp 55-57, Jan 2016*

[Abstract](#)

Judicious use of prophylactic antimicrobials to reduce abdominal surgical site infections in periparturient cows: Part 1 – a risk factor review

Authors: Dumas SE et al.

Summary: This review summarises current knowledge regarding the risk factors related to abdominal surgical site infections in periparturient cows and encourages practitioners to judiciously evaluate both their standard operating procedures and their use of antimicrobials in these situations.

Comment: This paper, by a team of US veterinary researchers from several institutions including Cornell and the University of Illinois, really made me think how far our thinking has come as a profession in a relatively short space of time. Up until very recently, I would have considered myself negligent if I performed a caesarian on a cow and did not give her a decent course of antibiotics. And yet here are some overseas colleagues encouraging us to weigh up the various risk factors when making the decision on whether to use antimicrobials following such procedures. I have included the paper in this issue of Research Review, not so much for the actual information it contains, but more as an illustration of the emphasis being placed on the development of antimicrobial resistance (AMR) and the dramatic changes in our approach to every day clinical cases that we are being encouraged to consider as a consequence. It is a very timely paper in light of the commendable, proactive stance that our own association is taking in an effort to minimise the development of AMR.

The focus of the paper is surgical site infections (SSI) following abdominal surgery in periparturient cows; pretty much caesarians and left displaced abomasum (LDA) surgeries. When deciding whether or not to use antibiotics (and which antibiotic to use) we are encouraged to consider both endogenous- and exogenous-related risk factors, each of which are explained in depth. A wound classification table is included to help quantify the risk of SSI. While some of the guidelines are based on surveys and other research, the authors point out that, to date, there has been little scientific work done on SSI in cattle so some of the recommendations are based on theoretical assumptions. However, the authors are planning a second paper, also to be published in the Veterinary Record, which will provide specific evidence-based recommendations for antimicrobial use in bovine abdominal surgery. As an interesting aside, I learnt that the mean lactational incidence of LDAs is 3-7%! I am assuming NZ data were not included in the study . . . otherwise it is time I upgraded to a better stethoscope!

Reference: *Vet Rec. 2016;178(26):654-60*

[Abstract](#)

Colostrum in neonatal calves: the key to survival, health and performance

Authors: Barrett D

Summary: There is no transfer of passive immunity *in utero* in calves and they depend entirely on the consumption of colostrum in the first days of life to provide the passive transfer of maternal immunity until their own immune systems can mature. This editorial emphasises the need for colostrum in neonatal calves in terms of survival, health, and future performance.

Comment: This paper, by veterinarian Damien Barret, from the Irish Department of Agriculture, is a short editorial article reviewing previous studies on passive immunity transfer via colostrum in calves. It also introduces another paper found in the same volume of the *Vet Record* by McAloon *et al*, which focuses on the relationship between selected perinatal paratuberculosis management interventions and the passive transfer of immunity. Perhaps of more relevance to those involved mainly in the dairy sector, I believe the review will still be of interest to those of us working with beef cattle as some of our clients obtain their stock by rearing dairy-beef calves. Also, the article largely draws on experiences and studies from Ireland, where their dairy and beef farming systems are predominantly pasture-based like our own.

The general concepts covered will not be anything new to readers, but I was interested in some of the research referred to, which quantifies, and even attributes an economic value to, the losses that can typically be expected from failure of passive transfer (FPT) in calves. These go beyond just illness and deaths in neonates, with the author also considering such factors as long-term health and longevity, increased antimicrobial use (and hence increased risk of antimicrobial resistance), and even increased greenhouse gas emissions! So, if nothing else, the article will help arm you with some additional facts and figures when trying to convince calf-rearing clients of the importance of good colostrum feeding practices.

Reference: *Vet Rec. 2016 9;179(2):45-6*

[Abstract](#)

Investigation of stillbirths, perinatal mortality and weakness in beef calves with low-selenium whole blood concentrations

Authors: Davis AJ & Myburgh JG

Summary: This paper reports the findings of an on-farm investigation into stillbirths, weakness, and perinatal mortality observed in calves on a commercial beef farm in South Africa. Post-mortem examination of the calves and histopathological examination of organ and tissue samples did not indicate an infectious aetiology. However, affected calves were found to have marginal to deficient whole blood selenium concentrations.

Comment: It is almost 50 years since Andrews *et al*. published their iconic map of the selenium deficient areas of NZ. Based on information gained from an extensive series of lamb growth trials, the map categorised large areas of NZ farmland including parts of Waikato, Manawatu, and pretty much all of the Southland Island from Canterbury south, as being markedly selenium deficient. These days, thanks to the widespread use of selenised fertiliser and animal treatments, dramatic cases of clinical selenium deficiency are very uncommon in sheep and cattle in this country. But, based on data from our animal health labs, low and marginal blood and liver selenium levels do turn up relatively frequently so the potential still exists for such cases, especially on our more extensive properties where the application of selenium prills is not feasible.

This paper from South Africa is a good illustration of what can happen in a beef herd when selenium deficiency goes unchecked. The case prompted testing on neighbouring properties on which low selenium levels were also discovered. An interesting aside, raised in the report's discussion, is the potential impact on human health. This issue has also been raised in NZ, especially in Canterbury, where inferences have been made in the past about the links between human health and low selenium levels in both meat and arable crops.

Reference: *J S Afr Vet Assoc. 2016;87(1):e1-6*

[Abstract](#)

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