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Kudos to Equine and DCV

Inside this issue:

Sites of action	2
No Brainer	3
Manuka Resistance	3
Bans do not work	4
Antimicrobial Guide- lines - Why Bother?	6

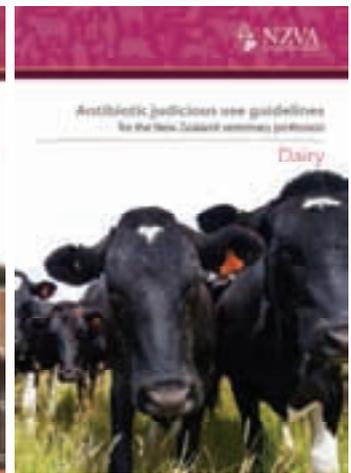
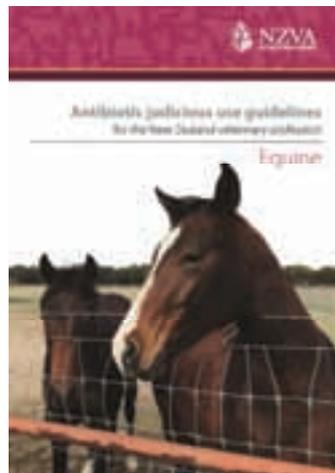


The Equine Branch of NZVA can really pat themselves on the back as being the first of the SIBs to approve the antibiotic guidelines formatted by NZVA.

The Equine Branch was closely followed by DCV and it is hoped both sets will be launched at the annual conference later this month.

While SIB sign off is considered essential, the guidelines will actually be the intellectual property of NZVA and thus available to all members, not just one specific SIB.

The equine guidelines were based on the BEVA guidelines that were adapted by the antimicro-



bial working group to be relevant to New Zealand and were peer reviewed by Professor Joe Mayhew.

The dairy guidelines were adapted from both the IDF and RUMA guidelines and were peer reviewed by Dr Scott McDougall. DCV are currently updating their

excellent formulary and these guidelines, covering broad principles, are designed to be used in conjunction with it.

In both instances it is recommended practices refer to these guidelines to devise their own antimicrobial protocols.

Special points of interest:

- * Ban everything - including bans themselves!
- * Lactating cows in transport - the answer is simple!

The Irish Angler

The rain was pouring down.

And there standing in front of a big puddle outside the pub, was an old Irishman, drenched, holding a stick, with a piece of string dangling in the water.

A passer-by stopped and asked, "What are you doing?"

"Fishing" replied the old man.

Feeling sorry for him the gent says, "Come in out of the rain and have a drink with me."

In the warmth of the pub, as they sip their whiskies, the gentleman cannot resist asking,

"So how many have you caught today?"

"You're the eighth " says the old man.

Sites of Action

The term PK/PD, or its full name of pharmacokinetics/pharmacodynamics, may seem daunting but the concept is quite simple. PK or kinetics tell us how much drug we can deliver while PD or dynamics is a measure of how much we need to have there.

For example, if we look at the MIC for ceftiofur against E coli we find it is higher than many other drugs but the kinetics show that very little gets across the milk barrier into the milk itself. As the site of infection for E coli mastitis is in the milk gland itself then we clear-

ly cannot get enough ceftiofur, by parenteral injection, there to be effective. The tap is too far from the fire.

What holds true for antibiotics also holds true for NSAIDs when treating udder inflammation, right? Wrong! The reason again is quite simple, the biophase, where the drug actually exerts its action, is not the same for udder inflammation as it is for udder infection.

Infection occurs in the milk cistern and, only when it affects the wall itself does it cause inflammation in

"In short, if we dispense with words like pharmacokinetics and biophase"

the udder. This inflammation is in the udder tissue itself, one of the cardinal signs of inflammation being increased blood supply, which also affects the kinetics.

In short, if we dispense with words like pharmacokinetics and biophase, antibiotics need to get into the milk cistern, at the site of infection, whereas NSAIDs simply need to perfuse the udder tissue, where the site of inflammation is.

Women's Tee

Nagy was trying his hand at golf one sunny day. He was beginning his pre-shot routine, visualizing his upcoming shot, when a voice came over the clubhouse loudspeaker.

"Would the gentleman on the women's tee please go back to the men's tee."

He was still deep in his routine, seemingly impervious to the interruption.

Again the announcement, "Would the man on the women's' tee kindly go back to the men's tee."

He simply ignored the voice and kept concentrating.

Once more the man yelled, "Would the man on the women's tee back up to the men's tee please!"

Nagy finally stopped, turned, looked through the clubhouse window directly at the person with the mike and shouted back,

"Would the person in the clubhouse with the microphone kindly shut the hell up and let me play my second shot."



The Fine

Tony was forced to take a day off work for a minor traffic offence.

He grew increasingly restless as he waited hour after endless hour for his case to be heard.

When his name was called late in the afternoon he stood before the judge, only to hear the court would

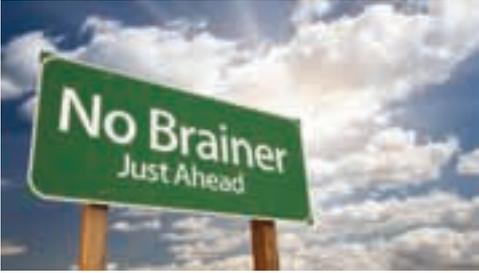
be adjourned until the next day and he would have to return.

"What for?" he snapped at the judge.

His Honour, equally irked by a tedious day, and the sharp query, roared, "Fined 200 dollars for contempt of court. That's what for."

Then, noticing Tony checking his wallet the judge said, "It's all right. You don't have to pay now."

Tony replied, "I'm not worried about that, I am just seeing if I have enough money for two more words."



There was an interesting snippet in the June Vetscript, on the welfare and ethics update page, about transporting lactating cows to slaughter.

With most of these cows not being dried off it is likely that those at risk have lowish blood calcium levels before they get on the trucks.

Recent research at Massey University has found that the problem is not hypomagnesaemia, as once

thought, but is actually hypocalcaemia.

The reasons for these low calcium levels are given as “both lactation and diet related – maize silage, palm kernel extract and lush autumn pasture are inherently low in calcium – but they’re further affected by extended time off green feed before transport, long transport journeys and time in the yards awaiting processing, which can trigger a collapse.

It is essential to address all these factors and prepare and manage these cows properly to prevent their going down. The researchers

also suggest considering pre-transport calcium supplementation”.

The obvious answer of course is Calol – no injection, easy to administer, prolonged action and the price compared to that of the cow is miniscule!

Vet only Calol represents reliable, safe and very economical insurance.



Manuka Resistance

A recent student paper, published in an on line journal has brought to light an interesting point, resistance to Manuka honey.

This is not surprising and highlights the fact that alternative medicine is not a means of avoiding resistance.

Despite the claim of “natural” it is the bacteriocins in honey which are antibacterial and resistance can

develop to them as with all antibacterial chemicals, including colloidal silver.

It is a timely reminder that there is no simplistic answer to antimicrobial resistance; alternative medicine does not out perform proper science, microbes are far too adaptable for that.

As one scientist proclaimed, “the best place for honey is on toast!”

Reference:

Camplin and Maddocks Manuka honey treatment of biofilms of Pseudomonas aeruginosa results in the emergence of isolates with increased honey resistance Camplin and Maddocks Annals of Clinical Microbiology and Antimicrobials 2014, 13:19 <http://www.ann-clinmicrob.com/content/13/1/19>

Hymn #365

A minister was completing a temperance sermon. With great emphasis he said, “If I had all the beer in the world, I’d take it and pour it into the river.”

With even greater emphasis he said, “And if I had all the wine in the world, I’d take it and pour it into the river.”

And then finally, shaking his fist in the air, he said “and if I had all

the whiskey in the world I’d take it and pour it into the river.”

Sermon complete, he sat down...

The song leader stood very cautiously and announced with a smile “For our closing song, Let us sing Hymn #365, “Shall We Gather at the River.”



Bans Do Not Work

It is amazing how often protagonists in various fields want to impose bans, despite overwhelming evidence that blanket bans do not work. The most famous failure of all time was prohibition in the United States in the 20s, with crime going on the increase, rather than the mooted decrease, during the period of prohibition.

Closer to home, despite 80% of the population being opposed, the anti-smacking law itself was introduced by the politicians and has been a dismal failure. New Zealand's national shame is the level of child abuse, which continues to increase despite the fact that the anti-smacking law was designed to combat it.

Nearly a century after prohibition we are slowly attaining more responsible outlooks on alcohol use with education, although one could argue lowering the drinking age (yet again by the politicians, against public opinion, maybe it is time to ban politicians) is not helping.

Making drink driving socially unacceptable, rather than a game of cops and robbers, has been the most effective way of combatting this scourge; just as making smoking in public places an antisocial event has done more to reduce the level of smoking in New Zealand than any blanket ban on cigarette sales could have.

Yet today we are still faced with calls for bans on anything and everything, from antibiotics to rodeos and who knows what else after that.

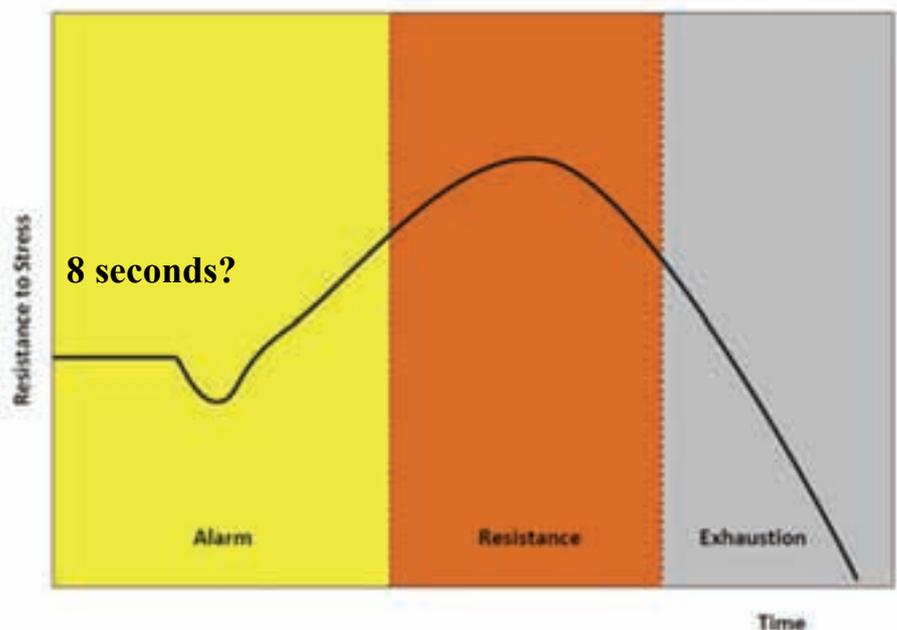
On the antibiotic front we often have calls to ban the use of antibiotics in agriculture, as if that will somehow solve the woes of over prescription by the medical profession. Certainly there are issues

with veterinary and agriculture use but these are best addressed by the profession itself, and that is being done in many countries around the world but, like climate change and CO₂ emissions, probably not in the countries where it really matters. In the meantime one must take the attitude that you cannot criticise unless you first of all conform yourself.

With rodeos the issue has the potential to be dramatically emotive and that certainly is what is happening. An excellent piece in the latest Vetscript has probably raised more questions than answers, and certainly shows that many of the 'anti brigade' demonstrate considerable amounts of an-

clude that it is hard to believe that no stress is caused when calves are stopped suddenly at the end of a rope, the real problem is with the word "stress" itself. It is actually a word that defies definition.

Hans Selye in 1936 defined stress as "the non-specific response of the body to any demand for change." In his later years, when asked to define stress, he told reporters, "Everyone knows what stress is, but nobody really knows." Selye conceptualized the physiology of stress as having two components: a set of responses which he called the "general adaptation syndrome", and the development of a pathological state from ongoing, unrelieved stress.



thropomorphism. However some events do seem to overstep the mark as far as animal welfare is concerned, calf roping one that immediately comes to mind.

One study measuring cortisol etc. levels concluded that there was little stress to the calf so that there "were no adverse effects of calf roping." While welfare experts con-

The General Adaptation Syndrome (GAS), developed by Hans Selye, is a profile of how organisms respond to stress; GAS is characterized by three phases: a nonspecific mobilization phase, which promotes sympathetic nervous system activity; a resistance phase, during which the organism makes efforts to cope

(Continued on page 5)

Bans Do Not Work

(Continued from page 4)

with the threat; and an exhaustion phase, which occurs if the organism fails to overcome the threat and depletes its physiological resources.

Resistance is the second stage and increased secretion of glucocorticoids play a major role, intensifying the systemic response and this may explain while the calf roping did not appear to raise cortisol levels; the whole effect was sudden and short-lived and the stress was rapidly relieved. This is not saying that calf roping is not an animal welfare issue in itself but that the animal probably does not have on going issues. Pain rather than stress would be the more appropriate word to use here.

Psychological stress resulting from our social environment causes the same physiological reaction that occurs in response to the threat of physical attack. Signals processed in the brain trigger the release of stress hormones such as cortisol and epinephrine to put the body on high alert. This is the fight or flight response and is often acute and sudden but can also be very short-lived. The adrenalin rush many get on roller coasters and bungee jumps is a prime example but, to many, it is a positive rather than a negative feeling; there is often a feeling of euphoria afterwards.

Prey animals rely on the adrenalin effect, it is normal in their lives, and so, while it may be hard to argue that they feel euphoria after being roped and brought to a sudden halt, it is also difficult to imagine a bucking horse having on going psychological stress after competing.

After all, in the horse's mind, there were 8 seconds of adrenalin rush then victory; at the end of the day

the horse, or steer, always achieves its objective, the removal of the rider. In the overall picture of the general adaption syndrome the threat is overcome and so there are no farther stressors on the animal.

It is bit like the dog that always barks at the postman, every day the postman disappears and the dog thinks he has done a great job. Just as in training dogs, you need to put yourself in the mind of the animal to attempt to work out what it is thinking and experiencing, not try and make that decision for it.

So it would be quite reasonable to assume that an 8 second burst of energy, 5 times a year, with the horse or steer feeling like a winner every time, would not be considered by the animal as something cruel and unusual.

Even a one off with the calf being roped would not be a source of long term stress (granted that it could be a very unpleasant experience, more so than being ridden), but, if it was done to the same animal repeatedly, one could believe that anticipation would mean that psychological stress may well kick in.

So looking at our famous bans, prohibition was a disaster and we

This Weekend

Guys:

A friend has a ticket for the All Blacks -Wales game this weekend.

Unfortunately, it clashes with his wedding.

"at the end of the day the horse, or steer, always achieves its objective, the removal of the rider"

were getting closer to responsible alcohol use until the politicians, against the will of the populace, scuppered the drinking age question.

The anti-smacking law, again brought in by the politicians against the will of the people, is an unmitigated failure.

Antismoking legislation has focused on price deterrents and making the practice antisocial and this has worked well. Only 15% of the population are now smokers with the goal of reducing to 5%, rather than a complete ban, by 2525.

So, as far as rodeo is concerned, there is no scientific basis for a complete ban but certainly some events, such as calf roping, could be eliminated and checks and balances put into place for the ridden animals, such as eliminating spurs and not overusing the animals.

Since emotive arguments are rarely won by scientific fact it is clear that rodeo has some work to do to avoid the calls for bans.

This is a similar position to the veterinary profession and access to antibiotics but, by taking the moral high ground, the New Zealand veterinary profession has shown responsibility and hopefully circumvented the politicians.

Responsible use, which should have been the catchcry all along, should be the aim, not bans on access.



Do you know anyone who wants to get married?

Antibiotic Guidelines - Why Bother?

Why are we so concerned about veterinary use of antibiotics? Why should it be the responsibility of the veterinary practitioners themselves? After all, is it not the medical profession itself and Northern Hemisphere intensive farming practices that are the major worry?

Antibiotic resistance is real and the best way to answer the above questions is via analogy. The maxim "no analogy is perfect" is often true but comparing global warming to antibiotic resistance is as close as it can get.

Quite clearly global warming is a very real phenomenon, the only debate being about the cause. While most of us accept that environmental pollution generated by the human race is the major cause, many with vested interests argue that it is a cyclical pattern of the Earth itself and mankind has no effect. It really does not matter who is right or wrong; the bottom line is that it must be beneficial to the planet as a whole to reduce the amount of pollution going into the atmosphere.

Likewise antibiotic resistance is universally accepted as a fact, with the only debate being the cause. Yet again vested interests come to the fore with what most of us perceive to be the real culprits, the medical profession, pointing the finger of blame at the veterinary profession. Just as with the global warming analogy, where the fact that our planet has, through history, undergone massive changes in weather patterns, giving rise to an emotive argument for naysayers, it is a fact that certain countries, especially those with intensive farming practices, have been extremely profligate with antimicrobial use in livestock. This has provided fuel to those who wish to shift the blame.

The farming model in New Zealand is an extensive one and the New Zealand veterinary profession is mainly concerned with therapeutic, rather than prophylactic or metaphylactic use. Thus the profession is among the most responsible users of antimicrobials in the world. However this is of little impact to the overseas vested interests; emotive arguments are rarely won by scientific facts.

In mid-2015 NZVA produced an aspirational vision statement, "By 2030, NZ Inc. will not need antibiotics for the maintenance of health and welfare in animals." This did cause some consternation among members of the profession, many of whom read between the lines. What the statement did NOT say was, "We will not have any antibiotics in 2030, we will not use any antibiotics to treat disease, we invite you (someone) to restrict and/or control our antibiotic use or, what we intend to do in the meantime."

The intention of the statement was to recognise that we (vets) are involved too, to take a leadership role in the AMR space, to create an awareness, to develop a programme of work and to be aspirational. While there was some disquiet shown by members of NZVA, in other circles around the world people sat up and took notice. Certainly some medicos at one infection control conference suddenly realised that the traditional whipping boy was fighting back. People as diverse as European academics and United States senators were congratulating NZVA on the leadership shown on such a sensitive issue.

Which is all very well but what happens from here? What do we actually do in the meantime? This

is part of the programme of work that has to be developed. A high priority amongst that is the development of antimicrobial guidelines for the various branches of the profession. The process actually began in 2006, through an NZVA working group volunteering their time and expertise and has stuttered along, being a monumental task in itself.

"As I hurtled through space one thought kept crossing my mind; every part of this rocket was supplied by the lowest bidder,"

Thankfully many countries have already developed their own guidelines and, since there is no need to reinvent the wheel, it is simpler to take these and adapt them for New Zealand conditions.

BEVA (British Equine Veterinary Association) a couple of years ago produced a set of guidelines for British veterinarians that are simple, compact and easy to follow. These have now been modified to suit New Zealand veterinarians.

It is important to remember that these are simply guidelines and not commandments; there is no compulsion and guidelines are simply advice for best practice procedures.

Rigid adherence is also not only not a prerequisite but actually not recommended. What is recommended is that a practice take these guidelines and adapt them to their own situation and that each clinician considers the fundamentals within them when making a prescribing choice. It is clear that different regions may have different disease problems and also antibiotic usage patterns may have been different over the years, lead-

(Continued on page 7)

Antibiotic Guidelines - Why Bother?

(Continued from page 6)

ing to different resistance profiles.

A survey published recently in the *Equine Veterinary Journal*¹ showed that there were clear differences in antimicrobial use in practice from that in veterinary hospitals. The latter were far more likely to use fluoroquinolones and 3rd and 4th generation cephalosporins whereas the predominant in-practice use was TMPS, leading to TMPS resistance being a factor in equine practice.

The major reasons for the preponderance of TMPS use were ease of dosing via feed and low cost. Considering that the first pass effect on TMPS is greatly magnified in the presence of food² and remembering the famous quote of pioneer astronaut John Glenn, "As I hurtled through space one thought kept crossing my mind; every part of this rocket was supplied by the lowest bidder," these are hardly the best criteria in which to choose an antimicrobial as a mainstay of one's chemotherapeutic armoury.

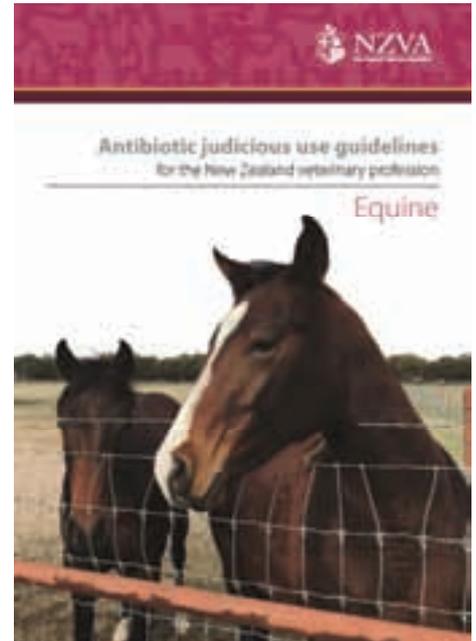
Just as there has been a lack of knowledge about antimicrobial use

patterns among equine veterinarians in the UK there is also a dearth of data on the same subject in New Zealand. Not only is it likely that a practitioner in Southland has little knowledge of antimicrobial use in the Waikato equine practices, it appears the same situation exists between practices just along the road from each other.

Guidelines therefore not only make recommendations for keeping resistance levels at a minimum, but also can provide advice resulting in better efficacy and also consistency between practices in prescribing patterns.

Most practitioners have their tried and true remedies, which they are loath to dispense with. Antimicrobial guidelines are not necessarily about altering that tradition but in providing advice to help choose and augment a considered antimicrobial regime.

There is also the added benefit that use of such guidelines further enhances the reputations of New Zealand veterinarians and underlines their role as the appropriate custodians of antimicrobial stewardship.



References

- Hughes *et al*, Antimicrobial prescribing practice in UK equine veterinary practice, *Equine Veterinary Journal* 45 (2013) 141–147
- MacKay R, Differences between *in vivo* results and *in vitro* sensitivity tests. Proceedings of the New Zealand Equine Veterinary Association of the NZVA, 2009

Smelly Socks

James had smelly feet, they stank. In fact they were so smelly and he was so embarrassed about them that he thought he would never marry.

Mary had a chronic case of halitosis. Her breath ponged. She was so self-conscious she always held a handkerchief to her mouth.

One day they met. They began a courtship that progressed without either knowing about the other's problem. They married.

On their wedding night James was preparing for bed in the bathroom. He had taken with him all manner of things to quell the smelly feet and, after a session of scrubbing and deodorising, it was Mary's turn to use the bathroom.

She was equally nervous and brought with her an array of mouth fresheners and mints to sweeten her breath.

She was in the bathroom when James remembered to his horror

that he had left his socks in there. There seemed to be nothing to left to do but confess to his smelly feet.

Mary was thinking the same thing, "I must tell him about my condition now," she thought to herself.

She opened the bathroom door and there stood James.

"I have something I must tell you," she blurted.

"I know," said James getting a whiff of her breath, "you have eaten my socks."



The Ant & The Grasshopper - A Modern Version

The ant works hard in the withering heat and the rain all summer long, building his house and laying up supplies for the winter. The grasshopper thinks the ant is a fool and laughs and dances and plays the summer away.

Come winter, the shivering grasshopper calls a press conference and demands to know why the ant should be allowed to be warm and well fed while he is cold and starving.

TV1,2 & 3 News show up to provide pictures of the shivering grasshopper next to a video of the ant in his comfortable home with a table filled with food.

The country is stunned by the sharp contrast. How can this be, that in a country of such wealth, this poor grasshopper is allowed to suffer so?

The Green Party stages a demonstration in front of the ant's house where the news stations film the group singing, "We shall overcome." They condemn the ant and blame John Key, Rob Muldoon, Roger Douglas, Capitalism and global warming for the grasshopper's plight.

The new Labour/Greens alliance exclaims in an interview with TV News that the ant has gotten rich off the back of the grasshopper, and both call for an immediate tax hike on the ant to make him pay his fair share.

Finally to gain votes to win an election, the Government drafts the Economic Equity & Anti-Grasshopper Act retroactive to the beginning of the summer.

The ant is fined for failing to consider how his hard work and prep-

aration has affected the Grasshoppers Mana and, having nothing left to pay his retroactive taxes, his home is confiscated under the Government Land Repo Act and given to the grasshopper.

The story ends as we see the grasshopper and his free-loading friends finishing up the last bits of the ant's food while the ant's old house, requisitioned by the Government, crumbles around them because the grasshopper doesn't maintain it.

The ant has disappeared to Australia, never to be seen again.

The grasshopper is found dead in a drugs related incident, and the house, now abandoned, is taken over by a gang of Homeboy spiders who terrorize the once prosperous and peaceful, neighbourhood.