The practicalities and pitfalls of antibiotic prescribing

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The original title suggested to me for this paper was ‘Handling the Stroppy Client’ meaning how to handle clients who demand access to what are now known as Restricted Veterinary Medicines (RVM’s) but formerly and better known as Prescription Animal Remedies (PAR’s), which is how they will be referred to here. Antibiotics naturally form the majority of this demand. However if that was all it was to be about it would be a fairly short paper – really this is not a major issue for us now (thank goodness!) although over the last 15 or so years with the expansion of dairying in the south we have had our moments I suppose.

Before launching into the topic a short history lesson is probably appropriate as in our (Clutha Vets) experience you can divide this topic into pre and post the southern dairy expansion which, although it started earlier, roughly coincided with the New Zealand Food Safety Authority (NZFSA) overhaul / restructure of the PAR prescribing and dispensing regulations.

Traditionally Clutha Vets always had a small number of dairy farmer clients in two main areas – when I started here 35 years ago there were 50-55 family owner operated farms of 75-250 cows in the Clutha Delta area (Inchclutha & Paretai) and 25-30 similar style & size farms on the Taieri Plains (round Dunedin Airport for those of you geographically challenged). In those days there were just three of us, increasing up to about seven vets before the dairy expansion began in earnest. We operated out of two clinics (Balclutha and Milton) to service these farms and despite there being very little in the way of formal consultation/prescription records we had very good control of the antibiotic side of things. Basically other than an injectable procaine penicillin and three intra-mammaries, (one containing penicillin alone and two different strengths of penicillin-streptomycin combinations) no other antibiotics were dispensed or authorised for future supply to use the current terminology. Any farmers who had had a demonstrated efficacy problem with the ‘allowed’ drugs was permitted to have a backup supply of an alternative (e.g. Mastalone”) but was under strict instructions to only use these in acute severe cases that were, based on his experience, unlikely to respond to the ‘first-line’ antibiotic. If a farmer wanted a ‘stronger antibiotic’ he had to speak to a vet (no exceptions) and following this (undocumented) consultation either the requested drug or a more suitable alternative was prescribed or as often as not a visit was arranged to see the patient in question. We used to visit and treat a reasonable number of cows with acute mastitis – higher numbers than we do now with eight times the number of cows. This was the way it was done here, farmers accepted it, there were no complaints, no inter-practice comparisons (why can’t we get it – Waikato Vet Services just hand it out!) as the era of mobile sharemilkers and multiple farm ownership across different areas had yet to arrive and the end result was we had exceptionally good control of antibiotic use on farms in our practice area.

As the saying goes all good things must come to an end and so it was with our relatively isolated dairy practice existence down here. About the mid 90’s the surge of dairy conversions in the South Island started and we were struck by what seemed like a tidal wave of ex North Island dairy farmers. I have to congratulate the North Island vets of this era – they were obviously very efficient at shipping a lot of the malcontents and discontents amongst their clients down south. Okay I exaggerate a bit – there were some nice people amongst them but there was a definite ‘not very pleasant’ minority that, included amongst their less endearing traits was the demand for access to all sorts of PAR’s and not just antibiotics. If they were to be believed then it seemed that every vet practice in the dairying areas of the North Island handed out whatever they demanded, no questions asked. Now I am quite prepared to admit that we were probably a wee bit in the dark ages in the relatively restrictive way we handled
issues around antibiotic usage but the indisputable fact remains – we had extremely good control over antibiotic usage and in particular the range of different antibiotics that were used on farms.

So we started getting demands for routine access to other antibiotics (parenteral and intra-mammary). It is 15-18 years ago so I am struggling to recall exactly but for a while I am sure we resisted and tried to maintain our ‘status quo’ however it became increasingly obvious that we were, compared to most other dairy practices, (unless these farmers were all lying through their teeth) comparatively restrictive in our antibiotic policies. I don’t recall any outright arguments and complete stropiness but there is no doubt there were a few tense moments. How I handled the stropier of these clients is hard to put into words – it’s an innate behavioural type thing but trying to point out the downsides (antibiotic resistance development, human implications of this, welfare issues etc) of unfettered access to antibiotics and maintaining an outward sense of calm and reasonableness (while sometimes inwardly seething!) is part of my and other vets in our practice approach and usually we can, if necessary come to a mutually suitable compromise. Gradually however we had to relax our policies. Then along came (about the early 2000’s?) the NZFSA induced changes in the overall handling, particularly prescribing and dispensing of PAR’s and we incorporated the necessary changes, mainly around PAR consultations, the frequency and recording of these. At this point I will split in to sheep, beef and deer farmers as a group and dairy farmers as another as the way these groups are handled by us vary from the antibiotic perspective.

Sheep, beef & deer farms

Compared to dairy farms antibiotic usage on these farms is relatively limited. At the initial quite extensive and exhaustive consultation over PAR usage their needs and requirements for antibiotics are discussed and documented. Most of our farmers are authorised for the future supply of an injectable penicillin – in the case of sheep farmers this is a procaine, benzathine penicillin. We choose to use Ovipen™ (Stockguard Animal Health Ltd) for this purpose for two distinct and in my view quite important reasons:

1. Ovipen™ only has a sheep dose listed on the label so it is harder for farmers to dose the dog or the cat etc. In fact we will often get farmers ringing to ask if they can use it on a calf or a cow etc. At least in this way we get the opportunity to check if such use seems appropriate and if it is then what dose to use (see point 2) whereas if the dose was on the label we probably wouldn’t.

2. Not only is the sheep dose the only one listed on the label but the dose rate specified is 1ml/10kg (Ovipen™ is a 300,000i.u./ml strength product). Most penicillins of this strength have dose rates on the labels for sheep (and other species) of 1ml/25kg which is just totally inadequate and actively encourages under dosing. I had a practice wide blitz 20-25 years ago on penicillin doses in sheep (and cattle) when those silly little tubes of Durapen 3 in 1, Procal/Vetspen 500 etc were commonly used and available from stock & station companies as well as vet clinics and most farmers grossly under dosed. One of the consistent pieces of feedback I got when farmers moved to the higher 1ml/10kg dose was that all of a sudden their bearing treatment success rate went up markedly. Funny that!! In my opinion NZFSA and/or the Ministry of Agriculture and Forestry (MAF) could do a huge amount to ensure better animal welfare, less development of antibiotic resistance etc by the very simple act of requiring penicillin labels to be updated with more appropriate dosages rather than ones left over from when Alexander Fleming first discovered penicillin in 1928 and resistance was an unknown concept. For example many of the penicillin product labels for dosages state:

<table>
<thead>
<tr>
<th>Species</th>
<th>Weight</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>50kg</td>
<td>2ml</td>
</tr>
<tr>
<td>Cow</td>
<td>400kg</td>
<td>16ml</td>
</tr>
<tr>
<td>Pig</td>
<td>50kg</td>
<td>2ml</td>
</tr>
<tr>
<td>Horse</td>
<td>500kg</td>
<td>20ml</td>
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Apart from the actual dose rate (1ml/25kg) being hopelessly inadequate in all the above species, the danger with specifying the weight for a particular species – for example Sheep 50kg is that farmers may take that as the recommended ewe dose (apart from Merino’s when did you last see a 50kg ewe?) and so the under-dosing aspect is increased even further.

The only other antibiotics we may authorise for future supply on sheep farms are:

- Spectrablock™ (oral spectinomycin) for those farms for whom Watery Mouth in new-born lambs is a problem.
- Tetravet Blue™ (oxytetracycline aerosol) for topical treatment for scald, odd wounds etc.
- Terramycin Powder™ (50gm oxytetracycline puffer) for topical pinkeye treatment.
Specific farmers, if they have a demonstrated ongoing problem with a particular disease e.g. foot abscess, gangrenous mastitis may be authorised for the future supply of an alternative antibiotic, injectable long acting tetracycline for example. Farmers experiencing a disease outbreak in a particular season e.g. *Salmonella brandenburg* or enzootic pneumonia, may after consultation and diagnosis be authorised for the supply of an effective antibiotic for the remainder of the season. Apart from the above examples no other antibiotics are authorised for future supply and anything else requires the farmer to speak directly with a vet.

Hence overall we still have pretty good control over sheep farm antibiotic usage and I am confident not a lot of inappropriate usage occurs. If anything the opposite applies – there are times when antibiotic use would be desirable from an animal welfare point of view but this doesn’t occur. I refer here to the scheme some of the freezing companies have whereby they pay a premium (often about 50c/head) for lambs from flocks where antibiotics are not used. So what happens instead on these farms? Animals are invariably left to suffer and/or die. In the interests of improved animal welfare, in my opinion and incidentally also the opinion of the Society of Sheep and Beef Cattle Veterinarians NZVA committee, these schemes, particularly the ones where even if one lamb receives antibiotics somehow the whole lot are deemed no longer antibiotic free should be abandoned and the sooner the better. If Mrs European Housewife was aware of the ramifications of her insistence on so called “antibiotic free” meat she mightn’t be quite so keen on the concept. This is an example of an ill thought out scheme based purely on emotion, not science and as for common sense, well that doesn’t even enter into the equation.

So far despite approaches to the two big freezing companies, the CEO of Federated Farmers, NZVA & through them the Meat Industry Association I have been spectacularly unsuccessful in getting any resolution to this problem. Perhaps the likes of a Holmes or Campbell Live TV exposé is the next approach – I suspect that would galvanise the relevant bureaucracy into rapid action!

**Dairy farms**

All dairy farmers have two consultations a year over PAR matters and obviously antibiotic usage is a big part of this. Based on a combination of the farm history, sensitivity testing (and in some cases I suppose, straight out client demand) a range of antibiotics both parenteral and intra-mammary are likely to be authorised and documented. While it is hard to give recipes, in the case of intra-mammarys we try and have a first up one (often a penicillin based one) authorised for ‘routine’ treatment with a second treatment, of what farmers would consider a ‘stronger antibiotic’ on hand for the more severe or acute cases. These could likely vary depending on the stage of the season and whether Staphs or Strepts are more of an issue. The amounts of these authorised are set at the consultation. What often happens though is that some farmers start reaching for the so called high powered one first up so gradually over time more and more of the intra-mammarys we would have, in the past, kept for more severe and/or acute cases are being used for routine treatment. We have a computer based warning system where the dairy vets are alerted when the specified amounts set for particular farms are exceeded but particularly in the busy spring period there can be sometimes quite a delay before these are followed up on if indeed they are at all.

In addition there are now more antibiotics other than the penicillin based ones (procaine penicillin, penethamate) used parenterally by farmers – tylosin and tetracyclines appear to be quite widely used by our dairy farmers now. Rather than call the vet when they see a sick animal sometimes their first thought is to try a jab of antibiotic X and see what happens. While they will have been instructed at the consultations on the appropriate use of these antibiotics I know from experience there is a certain amount of inappropriate and unauthorised use that occurs. With the intrauterine cephalosporin antibiotics we have the policy that if the farmer does their own A.I. then they can be authorised for the supply of these. However the hygiene of some farmers using these products (or any antibiotic product for that matter at times) does make you wonder sometimes. I’ve seen hypodermic syringes with uncovered needles in current use lying around on the concrete in dairy sheds. Cleanly inserting a catheter or even a Cidr seems almost beyond some dairy staff.

We had an issue since the dairy expansion started with a group of the ‘modern breed’ of dairy farmers/sharemilkers forming themselves into a buying group. While you have no choice but to accept this sort of thing with motor bikes, utes, shed cleaners, glyphosate, tail paint, anthelmintics et al they tried it on with certain PAR’s – in the antibiotic line this was, as I recall, mainly certain dry cow intra-mammarys. We refused outright to go down this road with them and this issue at least appears to have gone away.

The other thing that can happen is that there is sometimes farmer demand for whatever antibiotic has the shortest with-holding irrespective of its actual suitability for the job at hand. I am sure there are farmers throughout NZ who will have used Excede LA™ or Excenel RTU™ to treat mastitis because of these products nil milk with-hold!
Even allowing for the fact that we have gone from around 80 farms of 100-250 cows in the ‘old days’ to 170 odd farms averaging 650-700 cows now, I suspect the incidence of inappropriate antibiotic use in % terms has actually increased. So despite the supposed tightening of the PAR regulations, it is my opinion that in the dairy farm side of things and despite our best efforts, our control over the use of antibiotics has deteriorated somewhat.

Okay, you could argue we don’t have to hand out/authorise some of these products if we don’t like the way they are being used on particular farms but we are no longer relatively isolated in this very mobile and connected industry what with multiple farm ownership and the rapid turnover of sharemilkers moving from one practice area to another, etc., so the fact is that unless the whole dairy veterinary profession were to adopt a similar unified but slightly more restrictive approach to antibiotic supply (fat chance of that happening!) then there will always be some of the ‘modern breed’ of sharemilker who will always be playing one practice off against another.

As far as dry cow antibiotics go, again there is always a percentage of dairy farmer/sharemilkers who try and play one practice off against another but basically this is more over pricing type issues and I don’t think it results in significant inappropriate use of these antibiotics. Since the expansion of the dairy industry in the south, with dry cow treatments there has often been an element of the ‘tail wagging the dog’ – in other words the farmer/sharemilker tries to specify (based on advertising, pub talk, price, what he did in the Waikato etc etc) what product he will use rather than based on a consultation with the local veterinarian and coming up with what is the most appropriate treatment. Generally however we have been able to handle these satisfactorily and logic and common sense win in the end. We need to keep things in perspective though. The majority of dairy farmers are trying to do their best – the remainder are just trying.

It will be interesting to see whether this ‘tail wagging the dog’ approach to dry cow antibiotic supply (and indeed all PARs) worsens with the current corporate ‘bully boy’ approach that Landcorp is taking with the supply of many animal health products – at the time of writing this wasn’t overly clear but it appears that to all practical purposes there is an element of the prescriber being dictated to by the dispenser (the tail wagging the dog in other words). This may have become clearer by the time of the NZVA conference when this paper is presented.

**Summary**

To get back to the original question posed as the overall title for this session (Do NZ vets deserve the right to antibiotic use?) I think that on the whole we do have a pretty responsible approach when it comes to the supply of antibiotics to our farmer clients. Whole flock/herd medication with antibiotics whether for disease prevention or as growth promotants is virtually unheard of and you probably can’t say that about the poultry, pig and feedlot cattle industries round the globe. I would venture to suggest, as I have no reason to believe that our (Clutha Vets) dispensing procedures are significantly different to the majority of other responsible rural practices, that the sheep, beef, deer farm supply and control of antibiotic products is very good. On the dairy side it is not too bad but you could argue there is some room for improvement. Unfortunately for any improvement to occur somehow certain seemingly unstoppable market forces need to be taken out of the picture (as well as some farmers who can’t be trusted and, it must be said, some unscrupulous/unethical vets) and realistically none of these are likely to happen. In fact as far as the various market forces go these are only likely to worsen. When you look at the incidence of antibiotic residue problems in our primary produce then from that point of view the system we currently have obviously works pretty well. Any alternative system, especially any that effectively freed up antibiotic supply would hugely increase the occurrence of inappropriate antibiotic use on farms with the resultant resistance development and animal welfare implications that that entails.

Finally, the relevant authorities need to work on the following issues pertaining to antibiotic usage:

- Correct the dose rates specified on many of the penicillin products labels – in other words bring them into the 21st century. This would make quite a big difference in helping ensure correct farmer usage right across the country and lessen the potential for under dosing and the consequent worsening of penicillin resistance. In light of the thousands of hours that must have been spent tweaking the whole PAR system in the last ten years (or should I say, after yet another bureaucratic tweak, the RVM system) I cannot believe that something so basic as the dose rate for penicillin remains so utterly incorrect!

- Remove the ridiculous ‘antibiotic free’ scheme that some freezing companies have – this will result in an improvement in animal welfare on many farms. With animal welfare so much to the fore these days, both here and overseas, again I find it hard to believe that these schemes are allowed to continue.