



Responsible use of antibiotics in the beef suckler herd

Keith Cutler

Hello, I'm Keith Cutler, and I've been asked to present to you this webinar on responsible use of antibiotics in the beef suckler herd.

In some ways, that feels like a little bit of a fraud from my point of view because although I hope I know my way round a suckler cow and suckler herd management, I'm not particularly an academic, I've not got great interest in antibiotics and responsible use, other than being a practitioner, which is exactly what I am. I'm a cattle vet in a Central South of southwest of England, and have been for the last 30 years. But then, I thought about that and actually that's not quite such a stupid position because we, as practitioners, have the responsibility for using all medicines, and particularly antibiotics, in an appropriate way. And that's been driven home very forcibly recently by some of the editorial content in the veterinary press. So perhaps it is good that I'm presenting this to you. But don't expect any particularly special knowledge. Please also, excuse the lockdown haircut. I hope I'll be able to get it done fairly soon. I must, first of all thank, particularly Rachel and Kat, for their contributions to this presentation, members of the BCVA board, for reviewing it. And then RCVS Knowledge, and particularly Fiona for editing it, making very helpful suggestions. So thank you all, without them it wouldn't be half as good as it is, assuming that it's any good in the first place.

What are we looking to achieve in this module? Well on completion, hopefully you'll be able to explain the meaning and importance of responsible use of antibiotics, when you understand that I'll be grateful if you could help me out, 'cause I'm not sure I fully understand it. But hey, let's try and hold each other's hands and work our way through. You should be able to at least have an idea of auditing and benchmarking antibiotic use in the beef suckler herd. You'll be able to predict the major reasons for these antibiotics in the beef suckler herd. You'll be able to discuss the steps that can be taken with your clients to try to reduce antibiotic use in the beef suckler herd.

So what constitutes responsible use? And that's a really tricky one, isn't it? For me, I keep comprehensive records. I note down everything that I use, how much I use, when I use it, which animal gets it. But that's just recordkeeping, it's not necessarily responsible use. I only use licenced product and stick to data sheet recommendations on dose, course length and withdrawal period. Well again, good practise, but is that really what we mean

by responsible use? I don't use highest priority critically-important antibiotics. We shouldn't be using those anyway. So that's a normal use, isn't it? It's not really responsible use. I don't use antibiotics. Sometimes we need to use antibiotics. What about cow welfare? So while I don't use antibiotics if I don't need to may be a very laudable aim, if you do need to use antibiotics then you need to use them. So a good mantra is as much as necessary but as little as possible, when you need to use antibiotics you use them, you use them appropriate, the correct dose rates, the correct length of course. But hopefully we can manage our cows to mean we don't need to use antibiotics except in rare situations. Why is this of a concern to us anyway? Why should we worry? Well the academics amongst us will keep telling us that there's increasing resistance by many pathogens and potential pathogens, relevant not just to us as vets but also in the human medical field, and that's starting to make the treatment of some conditions a significant challenge. And if we keep on the way we are, and we get multiple resistance to many antibiotics, some conditions that currently are easy to treat and resolve are gonna become difficult and possibly impossible to treat. And we're going to start seeing animals and people dying of conditions that currently we can resolve, perhaps in a straightforward manner.

We know that the World Health Organisation has deemed certain classes of antibiotic as high priority and critically important antibiotics in human medicine. And they should not therefore be used in veterinary medicine, except under very rare and specific circumstances when we've made a particular diagnosis, other antibiotics have failed to work, and we have sensitivity testing to show that these particular antibiotics need to be used. That's not common, in my experience. These HP-CIAs include third and fourth generation cephalosporins, which are very attractive to the dairy industry because of a lack of milk withdrawal. But they're not often used in the beef suckler herd. Colistin, again, not often used in the beef suckler herd. The biggies are perhaps the fluoroquinolones, which were used quite frequently, particularly to treat cases of pneumonia. And we'll come up with that, we'll talk more about that later on. In addition to the HP-CIAs, a use of a lot of the longer acting macrolides is also coming under increasing scrutiny. Is it responsible use to give a long-acting antibiotic or a long-acting preparation as a single dose? There are people far cleverer and more knowledgeable about this about this sort of thing than I am, who will be able to inform you about that. But how do we know the situation in the suckler herds we look after? Perception is that antibiotic use in suckler herds is not particularly high. But how do we know? Are the antibiotics that I use dispensed on demand, or only following discussion with a vet? Do we need to talk with the farmer about what he wants the product for, and why he's got a problem? Do we sit down with our clients and review antibiotic use in their suckler herds on at least an annual basis? And do we benchmark that with other similar farms, or other farms in the practise? Do we take a proactive approach to herd health planning in which we can identify the main reasons for antibiotic use on the farm, and then implement management procedures and protocol aimed at reducing the need for that antibiotic use in the first place? So what is the situation on this farm? What is our client actually doing? How do we

work that out? Well, we start off by auditing don't we? And although best practise may be to measure the milligrammes of antibiotic use per kilo of beef on the farm, or a proportion of antibiotics receiving a course of treatment in cow treatment, days or count courses of treatment, defining these metrics is often not easy. But is that a reason not to do it? Of course not. We need to look at antibiotic purchases, hopefully they're all from the practise, but are they all from a known source? Are they all used to treat the cattle on the farm? Or is it a mixed farming enterprise? Are there, as well as beef cattle, are there dairy cows, are there sheep, are there pigs? Where are the antibiotics being used? If they are being used in the beef cattle, which animals are they being used to treat? Are they being used to treat cows or calves, and for what? As we said above, this can be difficult, but that's not a reason not to try. And even if we can't work out milligrammes of antibiotic per kilo of beef use on the farm, or count courses of treatment, we have data easily to hand.

Defining the antibiotic purchases from the practise ought to be easily available from the practise management system, and can give us at least some level of information about level of use. We can then benchmark that against other farms in the practise. So we need to measure, monitor and manage. We move on to benchmarking. We can compare antibiotic use with all herds or similar herds nationally, through the Medicine Hub, if we can get to one of the higher metrics. If all we're doing is measuring antibiotics purchased through the practise, we can at least benchmark with other suckler clients within the practise, and very soon get an idea of who's buying and using, therefore, a lot of antibiotics and who's not. And hopefully then we can take the good management strategies implemented by the clients not using a lot of antibiotic and transfer them to the ones who find they have to use more. We also need to know something about how the antibiotics are used on our farms. So are they used to treat disease? Yes, of course, some of them will be but how much is used for metaphylactic treatment? If a group of calves has started to cough and we're treating one or two, should we or shouldn't we treat the whole group? As far as I'm aware the jury's out on this but actually if we can predict that over the course of time if we're treating one or two calves every other day and in time we will treat the whole group or even the whole group twice perhaps we will be better off to treat the whole group now, that may end up using less antibiotics in long-term and maybe more welfare friendly. Are we using the antibiotics prophylactically? Much more difficult to justify isn't it? So we need to know not just how much antibiotics are being used, but where they're being used, why they're being used so we can make judgements and recommendations on reducing use, measure, monitor, manage. Why do we need to treat animals with antibiotics? Well, of course disease, don't we? Thank God for disease because we as veterinary surgeons may not have much of a job without it but remember that not all diseases are caused by pathogen susceptible to antibiotics. So how often for example are antibiotics still given to scouring calves? When the most common pathogens involved are viral or protozoal, they don't respond to antibiotics. We try to justify that, don't we? By preventing secondary infections on a compromised gut, but is that right? Or should we use something more targeted either the causative agent or other symptoms?

So education will often result in a similarly or possibly more efficacious treatment but reduce antibiotic use. So calf scour we mentioned, the most important part of the treatment is fluids possibly followed by anti-inflammatories. We'll talk more about calf scour later. We need to plan, prevent and protect. What causes disease is a complex of interactions between pathogens, animals and their environment, isn't it? And when these come together in a negative way, disease is the consequence. So we need to look at all these aspects, don't we? Efforts aimed at reducing exposure to pathogens, maximising immune function and optimising environmental conditions will minimise the prevalence of disease and therefore the need to use antibiotics. So focus on all these areas, plan, prevent protect.

So planning, proactive planning for health will reduce the prevalence of disease. This will improve animal welfare a good enough reason in itself. It will improve productivity and therefore profitability for our clients and it will reduce the need for antibiotic use. We need to prevent, reduce exposure to pathogens. So look at herd health status, look at biosecurity. So herd health status, can we work towards SPF status? Is the herd registered with a CHeCS cattle health scheme for one or any of the diseases covered by the CHeCS programmes. The big four BVD, IBR, leptospirosis and Johne's disease, add TB to that, more recently add TB to that but that can give us a framework to manage our biosecurity and accredit the health state of our animals. If not CHeCS and what about BVDFree England? Do we know the BVD status of our suckler herd, if not, why not? You should and even if we know the status, it should be free from BVD, why is this virus still prevalent amongst our cattle? And BVD of course causes direct immunosuppression. Other infectious agents will cause more and more severe disease when BVD is endemic within a herd and therefore antibiotic use will be high. Or Johne's disease, for example, are we working to manage Johne's disease or do we stick our head in the sand and ignore it and Johne's disease while it doesn't have the direct effect on immune function that BVD has, it has an indirect effect on immune function. So again other diseases are more prevalent when BVD is endemic in herds. MAP infected animals have more pneumonia, more mastitis, for example. And biosecurity, we need to manage the risks from other cattle, so that may be farm boundaries. We need to have secure farm boundaries to prevent direct contact with cattle of unknown health status on neighbouring holdings. Many people say this requires double fencing with at least three metres gap that doesn't need to be permanent fencing. We can manage that using temporary electric fencing, for example, we can have wide hedges or high walls or we could just come to the conclusion that it might be easier not to graze our boundary fields when our next door neighbour is grazing his boundary field. That's a bizarre concept, isn't it? Farmers working together but how about persuading your client to come to an agreement with his neighbour that you will shut your boundary field up for silage this year? And he can therefore for his, if he grazes, if he shuts his boundary field up for silage next year and you can grow yours. Even better how about both of you working towards BVD eradication in your herds at the same time? And then when we do have to quarantine, when we do have to purchase stock,

quarantine and we all talk about quarantine, but what does quarantine actually mean? Does it mean that dingiest, darkest hold at the furthest reaches of the farm? You put the animals in there for two or three weeks after purchase. You throw them a ward of hay every day. If that disappears, they get they're eating it, so they must be fine, nothing nay. But quarantine, no, is actually a proactive process, isn't it? It means going and looking at the purchased animals each day with a critical eye looking for signs of ill health. And if you see any, investigating it. It means taking necessary samples or carrying out unnecessary testing so we can determine the health status of those animals. And that doesn't always just mean taking blood samples and doing a test for BVD. What about if they're females and they're BVD antibody positive? Should we not pregnancy test them while they're in quarantine as well? So lots of connotations there. It also allows us time, doesn't it? To complete any necessary courses of vaccination before they joined the main herd, which hopefully will reduce the disease threat to them. So quarantine is a complex and proactive process. And then wildlife biosecurity. So there's lots of different diseases that can be brought in by wildlife. And my guess is many of you will be thinking TB and badgers at the moment. And there's lots of information about badger biosecurity on the TB hub, so please take a look at that.

But it's not just badgers, is it? Rabbits and Johne's disease, birds, starlings, pigeons, seagulls, and salmonella, for example. So wildlife biosecurity deserves careful consideration as well. And then farm visitors including contractors and their equipment and other particular be might have brought it about, slurry spreaders, how often do your farmer's hire slurry spreaders? And when they do, how often does that slurry spreader come cleaned and disinfected or even cleaned? And how often does it come half full of slurry from the farm it was last on. And the first load you spread on your fields will be not only the slurry but all the pathogens from the previous farm. Protecting the environment, reducing challenge. We're all aware of social distancing at the moment, but aren't we? But we need sufficient space for our animals. Disease is a possible consequence of increasing stocking density. And over the years, the recent years, we've done that with our cattle herds, more and more cows in smaller and smaller space. Clean and dry, bugs thrive in dirty, damp conditions. Shelter, if the cows are kept outside we can then utilise energy in the cows for performance and ensuring immune function. Ventilation, if the animals are inside to remove moisture, dust, noxious, gases, and pathogens but remember too much ventilation is bad as too little, isn't it? And if we're keeping an animals in a building that relies on the stack effect, remember that we can have to lower stocking density as well if there are not enough animals in that building to provide the heat differential between the animals and the reach, we won't get adequate ventilation.

Protect the cows, the concept of the resilience cow. We need to manage the cows to maximise their immune function. And there's lots of things of relevance here, nutrition and body condition score management. The immune system needs an adequate plenty of nutrition and is one of the first things to fail if nutrition isn't up to scratch. So we need an adequate level of energy and protein intake. We also need a good mineral nutrition

known because many of the minerals that we talk about have roles in your immune system. Many of them act as coenzymes or things like that. So selenium in particular but many others as well. Colostrum of course is absolutely vital to the newborn calf. We know that the structure of the bovine placenta prevents the passage of antibodies into the foetus before birth. So the newborn calf relies on colostrum for its immune function. And we need to look at the quality of the colostrum. Again, the nutrition of the cow is important here. A cow that's in body condition score one or less is not gonna be making good quality colostrum, is it? We need to look at a quantity of the colostrum and the calf needs to suckle that quickly. When I was at college we were taught six pints within six hours. We then had an interim period of five litres in five hours. We now talk about 10% of body weight within four hours. I've been accused of confusing farmers with that, but is that confusing? They're all saying the same thing. A lot of colostrum quickly. When everything else is right, we can then use vaccination to boost the immune system but vaccines have to be given according to the manufacturer's instructions. They need to be stored correctly, given at the right time, that right dose, the right route of administration, the right interval between the initial doses of the primary course, if indeed more than one dose is required. And we need to eliminate immunosuppressive pathogens, we mentioned BVD and its direct effect on the immune system reducing both white cell numbers and function. And that can be depending on the strain of BVD anywhere between a 50 and a 90% reduction, that's pretty profound immunosuppression and Johne's disease through its effect on the nutritional status of the cow has an indirect fate and possibly other diseases or infectious agents affecting immune states as well. Then we need to look at where antibiotics are used.

The perception and my perception was the antibiotic use in beef suckler herd is low and mainly aimed at individual cases but do we know that so case without our measuring, without our benchmarking and auditing, do we know that's the case? Where are antibiotics used? So the hotspots and my little bit of research prior to this, giving this webinar shows lameness is still a major use of antibiotics in the beef suckler herd around the time of calving. Scouring in pre-weaned calves remains a big use of antibiotic in the beef suckler herd and then pneumonia in weaned calves. A big topic, big in its own, right? And almost too big for this presentation. So lameness, remember that preventative foot care and timely intervention is just as important in the suckler herd as it is in the dairy herd not just to minimise antibiotic use, but for animal welfare reasons. Calving, avoid difficult calvings. They're the ones that go wrong. They're the ones end up with each one trauma and infection, aren't they? How can we do that? Body condition score, make sure the cows are fit not fat. And remember that both thin and fat cows have a higher prevalence of difficult calvings, thin cows, because they just don't have enough stamina. Don't have the energy to push the calves out, fat cows, because the pelvic canal is narrowed by the presence of fat deposits. And we're gonna end up causing trauma and possibly losing the life of the calf because it prolonged birth. Look at the genetics, perhaps we should be avoiding genetics with double muscling but it's not just, this is a bull EBVs are so useful. Now we can look at gestation lengths, can't we? We can look at calf birth size, we can look at ease

of calving. And what we want really is a small calf that pops out easily, jumps up, starts suckling it's colostrum quickly and grows like stink rather than some of these great big calves that we have historically seen. And hygiene, clean, clean pen or box with good under foot grip, wash your hands and arms before you investigate why, whether there's a problem and what might be causing it and give assistance. Use clean ropes and a clean calving aid. How long does it take to wrench a calving aid off after using it? How much effort does it take to clean and disinfect your ropes? And yet how often to farmers present shitty ropes or stickers boards? And wash the back end of the cow if you're going to intervene. Try to minimise the contamination to minimise infection, to minimise antibiotics. Scouring and pre-weaned calves is another major area that we've touched on already. And we've asked this question, most calf scour is not bacterial in origin, so why are antibiotic use so frequently in its treatment? Is that just history? Is that what grandfather did and father did so I'm gonna do it. And when I come into the vet and ask for some antibiotics to treat scouring calves I'm just giving them, or is that an opportunity to engage with our clients, to educate them into what the best treatment may be and how to prevent cases of scour?

Concentrate on particularly hygiene again, it's not a surprise, is it? The hygiene keeps coming up, bugs thrive in dirty damp conditions. Herd fertility, how long is our calving period? I would like my clients all to have a calving period in their suckler herd of less than, I'd like it less than eight weeks, less than 10 weeks, many of them are less than 12 weeks but many clients say to me, calving pattern is not a problem, is it? I get 98% of my cows and calves every year. Yeah, but when's the first one born? Middle of January. And when's the last one born? Middle of December, that's not a calving pattern, is it? That's management by accident. Remember that bugs build up as calving progresses. So later born calves are more likely than early born calves to become sick and require treatment. So we need to start calving with a bang and have as many cows calf within the first two or three weeks of the calving period as possible. It's just like sheep, isn't it? Weaned watery mouth strike halfway through lambing. We should aim to calf at least 60% of our separate cows within the first three weeks of the calving period.

Colostrum we've talked about before. Vaccination, and we here talking really about vaccinating dams to improve cholesterol quality. But remember that will only work if cholesterol intake is of sufficient volume and quickly, it doesn't matter how many vaccines we push into the mums, if the cows don't suckle quickly and they're not gonna get the protection only. And remember that fluids and nonsteroidals are often a more important part of treatment than antibiotics. Although in specific cases we may find benefit of antibiotic treatment. and then pneumonia in weaned suckler calves. And I'm not sure whether this really fits into antibiotic use in the beef suckler herd but it's such a big topic that it had to be mentioned, it's enormous, it's worthy of a presentation all on its own. And it's also mentioned in the young stock module. We need to consider cholesterol status. So even after weaning, perhaps eight months of age, suckler calves that had a poor cholesterol status after birth and suffered from scour are more likely to contract

pneumonia and require treatment. Weaning management, how do we work through weaning to reduce stress? How do we group our calves after weaning? Nutrition, we need to feed them well to maximise their immune function. We need to feed them well to maximise their production as well. But immune function and ventilation we've touched on previously. And of course, pneumonia vaccination, what tool to have in our armoury, but what ways and when and unfortunately, currently there is no licenced vaccine in this country that will protect against every infectious of calf pneumonia that we have. There's not even any combination of licenced vaccines that will do that. So whatever we use, remember there's something that may come along and thwart us.

Do we know what our endemic pathogens are if we're dealing with home bred calves. And they'll often be similar year after year if we're buying in calves to rear of course sooner or later, we'll buy every pathogen going. Don't forget lungworm, when do we worm? Do we worm our sucker calves assuming spring born? Do we worm them at weaning just we house them in autumn or are we better to worm them a week before weaning reducing stress, getting rid of the worms before the calves are put into the sheds, but it means too handling, so that's another lot of stress and do the farmers have time? And what should we worm with? Wormers kill worms, don't they? Will they, don't actually, some do some don't. And if there's one thing that's worse than a lung full of live lungworm is a lung full of dead lung worm. And BVD, the immunosuppressive effects of this virus. Have we got PI running around amongst our weaned calves causing widespread immunosuppression, allowing pneumonia bugs to cause more and more severe disease than they otherwise would. Do we know the BVD stages of our herds, if not, why not? And if we do and it's not free, why isn't the herd free? We can get rid of this virus. Maximise the resilience of our animals. So they don't get sick in the first place and don't need antibody treatment.

Concluding comments, look after your cattle. They got a pretty good immune systems if we look after them, support them, support their immune system. We may find they don't get sick. We don't need to treat them with antibiotics. Plan for health, don't treat disease. Ensure good facilities, particularly having facilities. What's easy gets done, was difficult doesn't, so good facilities, that's why they're called facilities. They facilitate management, don't they? So preventative routines, foot trimming, vaccination, all these things are much easier and therefore get done at more opportune times when we've got good facilities than if we haven't. And if the worst happens and we do need to treat disease, it ensures early intervention and early treatment is much more likely to be successful than waiting until diseases are boxed. Then we're gonna need more causes of treatment, prolonged causes of treatment, using different antibiotics perhaps, the ultimate will be that we end up using much, much more antibiotic than we would have needed to had we been able to treat early. Good facilities promote compliance, don't they?

Plan, prevent, protect, reduce the need to use antibiotics in the first place. But when you need to use them, use them.

Further reading this lots of places you can go to, but the Cattle Health and Welfare Group Antimicrobial Usage Subgroup has recommendations for measuring and comparing use of antibiotics on beef farms that was published November, 2020. And there's many references that talk about the benefits of health and how we can achieve those.

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