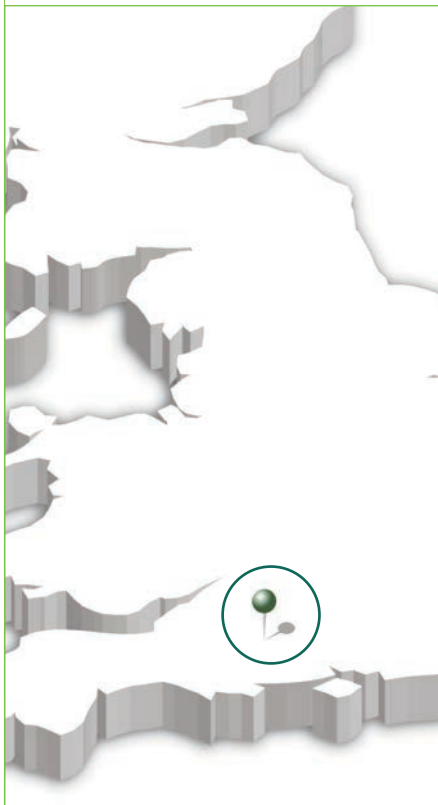


Why and how to reduce antibiotic usage in the milking parlour



WILL SHEPPARD, ENDELL VETERINARY GROUP

Back in the 1960's the Five Point Plan was introduced to the dairy industry – a set of simple guidelines which gave a co-ordinated approach to controlling mastitis. It included the recommendation for the blanket use of antibiotics at drying off.



(Left) Will Sheppard, (Right) Richard Sainsbury

Veterinary surgeon Will Sheppard

XLVets practice Endell Veterinary Group



But today, the farm environment and the management practices on most dairy farms are very different. Cows are housed in cleaner conditions, the advent of teat sealants has enabled protective cover to be given against infections arising in the dry period, and parlour routines may now include teat-dipping and flushing clusters, plus a more proactive culling of high cell count cows is often taken.

Just this month, Arla announced its 'Arlagården' quality assurance scheme will come into place in the UK from October 2015. For Arla farmers, there will be a requirement to review mastitis management practices which will include discussions with their vet about the use of selective antibiotic dry cow therapy, rather than blanket treatments. It's a move which it's expected other milk companies may well follow in the future.

'With all the improvements in cow health, hygiene and cleanliness, there's now an opportunity on many farms to change from a blanket approach on antibiotic treatments, to a more selective one,' says Endell Vet Group's Will Sheppard.

'Especially when taking into account the fact that using antibiotics can actually increase the risk of toxic mastitis cases. This is because antibiotics will kill off all the bacteria present in the teat canal, including the natural flora – the 'good bacteria'. This then leaves the area exposed to infection by coliform bacteria - the 'bad bacteria'. This in turn can then increase the risk of toxic mastitis, which might have been reduced by the presence of 'good' bacteria.'

Many farmers remain apprehensive to adopt a selective approach, despite the advent of teat sealants. However, Will and his colleagues believe more farmers could be using just a teat sealant when drying off cows which have a low cell count and clear mastitis record. This could save on medicine costs, without detriment to mastitis incidence or cow health.

In the future, there could also be scope to take a selective approach with milking cow tubes, following the availability of on-farm kits which identify the type of bacteria pathogens present in mastitic milk.

A change to selective dry cow therapy has been a positive move all-round

Around half of Endell Vet Group's dairy clients have adopted a policy of selective dry cow therapy. One of them is Richard Sainsbury of Round Barrow Farm, near Salisbury. He has been taking this approach since the summer of 2012, and last year nearly 80% of his cows were dried off using a teat sealant alone.

Richard's 190-cow herd of New Zealand Friesians are fed rations high in forage and graze outdoors in summer. The herd is averaging yields of 6,800 litres/cow. Richard works by himself, and block-calves the herd in the autumn, getting extra help from his wife Claire to rear the calves.

Endell's Will Sheppard explains: 'Richard is someone who pays a lot of attention to the detail, and this always pays off. He had been getting some cases of *E.coli* mastitis originating from the dry period.

'As there is evidence that killing off the natural bacteria with an antibiotic tube makes the teat

canal more susceptible to attack from *E.coli*, I advised him to drop the use of dry cow antibiotics in cows which had low cell counts. So Richard's criteria for drying off a cow using just a teat sealant are: a somatic cell count of less than 250,000 cells/ml in the last three milk recordings, plus no cases of mastitis in the lactation.'

This approach has been highly successful and has had no detriment to the milk quality or mastitis incidence: Richard's herd has a mastitis rate of only 19 clinical cases per 100 cows per year. The rolling cell count is 100,000-120,000 cells/ml and only 7% of the herd have an SCC above 200,000 cells/ml.

Will adds: 'These excellent results have been achieved through paying attention to the drying off procedure, the milking routine, and to always ensuring the cows' environment is as clean as possible.'

During the winter months, there are more cows than the 160 cubicle spaces in the shed, so Richard has provided straw yards for the overflow. These yards are totally cleaned out every three weeks and bedded up daily.

'Richard is also very particular in his milking routine, and higher cell count cows will always be milked last and the clusters are flushed after such cows,' adds Will.



Dry cows

Drying off procedure

At Round Barrow Farm, the herd is block-calved over a 12-week period from August to November. In fact, Richard has an enviable 80% 6-week in-calf rate.

Richard adds: 'I want them to calve in September because the weather is usually dry, it fits in with the rest of the farm setup, and the milk price is better!'

Cows start being dried off from the end of June. The process is treated as a completely separate procedure from the main milking.

When the cows come into the parlour, Richard does not milk the ones that need drying off. Instead, on exiting, these are drafted off to an area where they stay until milking has finished. Richard then washes the parlour down to create a clean standing, before letting them back in again.

Richard explains: 'Drying off is always done at the morning milking, and I do it in batches - of up to eight - where possible.'

'All teats are pre-dipped and then dry-wiped, and cows milked as normal. Then I dip the teats with the pre-dip again and dry-wipe again. I'll dip the next cow before wiping the first, so that the dip has more time to have its effect.'

'Each teat end is then wiped with cotton wool soaked in surgical spirit as an extra precaution to prevent any surface bacteria on the end being pushed into the teat canal with the sealant.'

For each cow, Richard wipes the end and injects the sealant, one teat at a time. He takes care with his injection technique, and also works on the furthest away teats first. He then dips all the cow's teats again using the post-milking teat dip.

Richard explains: 'The herd is grazed outdoors in the summer. So once the cows have been dried off, I let them stand in a clean yard for a while before moving them to fields away from the noise and sight of the parlour.'

Around one month prior to calving, the cows are moved closer to the farm to a 'transition field'. Here they are strip-grazed, moving onto a fresh area of grass every day. Richard also takes care to move the ring feeders daily, so that their environment is always kept 'clean'.

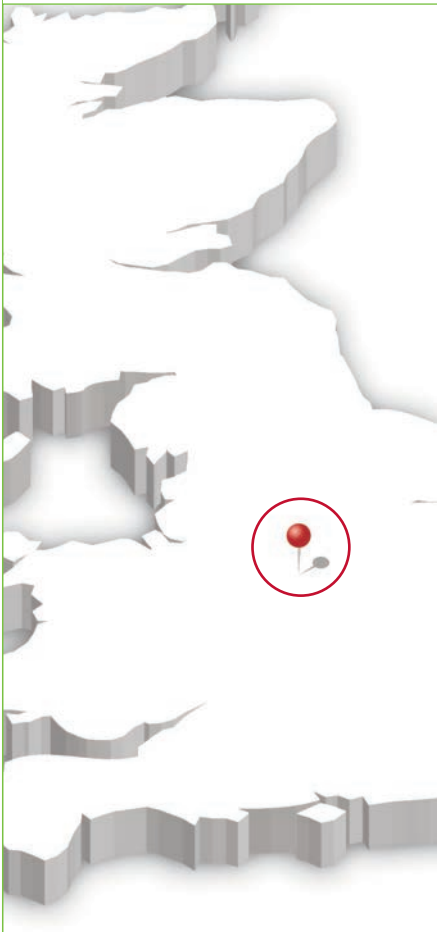
Richard's changeover to the selective use of dry cow tubes has had no detriment to his herd's health and has saved him money too. In the past 12 months, he will have spent around £1,500 less on dry cow tubes. Moreover, he has significantly reduced the incidence of toxic (*E.coli*) mastitis cases.



Peter Plate, Jim Willshire and Will Sheppard

Tips on teat sealant use

- The application of teat sealant differs from antibiotic tubes. It is important to hold the top of the teat so that the sealant stays in the teat canal. If in doubt, ask your vet to show you the technique.
- Teat sealant tubes can get hard to squeeze in cold weather - but don't be tempted to put them in warm water. If you know you will be using some, put them in the house beforehand where they will be at a warmer temperature, and then just bring the box out at milking time.



Veterinary surgeon Carolyn Baguley

XLVets practice Scarsdale Veterinary Group



CAROLYN BAGULEY, SCARSDALE VETERINARY GROUP

Alternatives to antibiotics

Leicestershire dairy farming couple Tom and Debra Willoughby have not used any dry cow antibiotics for nearly 10 years. At Grange Farm near Ashby de la Zouch in Leicestershire, they run a 100-cow organic herd, and maintain a respectable cell count of around 180,000 cells/ml, using only a teat sealant at drying off.

Tom and Debra's philosophy is to run a profitable herd, and achieve a good quality of life - both for themselves and the herd. Milk yields are averaging 5,500 litres per cow, with 4,200 litres coming from forage.

Tom explains: 'We are not pushing for high production and try to reduce stress on the cows as much as possible. So we have worked with our vets to eradicate BVD and digital dermatitis, and are vaccinating against IBR. We aim to keep everything clean - the cows, the bedding, our hands, their teats.'

At Grange Farm, the passageways in the shed are scraped four times daily. The straw yards are bedded daily - or twice daily if needed. They are also cleaned out completely and replenished, every 3-4 weeks. So during the winter, over 2t of straw is used per cow. Cows are also allowed plenty of space for loafing, feeding and lying down.

'Reducing antibiotic usage is the long term aim,' says Tom. 'If cows are kept under good welfare conditions, they will be less stressed and healthier. Last year we only had 24 clinical cases of mastitis in our 100-cow herd.'

When signs of mastitis are spotted, the Willoughbys will assess what the most appropriate treatment is. Debra explains: 'In most cases, this will be one of the many homeopathic remedies available, but sometimes antibiotics are the best option.'

'If a cow comes into the parlour with a hot hard quarter which is painful to the touch, we might treat using homeopathic Belladonna, for instance. This is an extract from Deadly Nightshade, which has been diluted down for use as a homeopathic treatment. It is in a liquid form which is sprayed onto the cow's nose and vulva - the mucous membranes.'



Tom and Debra Willoughby



Carolyn Baguley with Tom and Debra Willoughby



A range of homeopathic treatments



Homemade food protection

'Similarly, any cases of metritis are assessed by looking at the colour, texture and smell of the discharge, and then treated with an appropriate homeopathic remedy, such as Pulsatilla 30. In cases where cows have a high temperature, are not eating, or showing signs of distress, then we consult with our vet.'

Cow welfare is important to the Willoughbys and cows which have had a difficult calving are given homeopathic Arnica, to soothe the bruising, along with a conventional painkiller.

The couple are relatively new clients for Scarsdale Vet Practice. They receive fortnightly visits from vets Carolyn Baguley or Rose Jackson for fertility checks, and are also getting help and advice on many other aspects of herd health.

Tom and Debra have been delighted that their new vets are prepared to support their management philosophy. So, non-cycling cows are not treated with prostaglandins or progesterone, but instead are given a massage of the uterus and ovaries.

Carolyn says: 'The cure rates for cystic cows have been very encouraging. I've also been impressed with the cure rates for mastitis and the cell count levels which have been achieved without the use of antibiotics.'

In addition, Carolyn has helped Tom and Debra to look at the 'big picture' on mastitis threats by working through the DairyCo Mastitis Plan. This identifies the risk factors for mastitis on a farm.

'It's important to identify where the problems are by looking at data, and the timings. Then focus on one area and tackle that rather than trying to look at everything in one go,' says Carolyn.

The Willoughbys are collecting mastitic milk samples and sending them for analysis, via the Scarsdale practice, to determine the causative bacteria.

Carolyn adds: '*Strep. uberis* was identified as one of the key mastitis pathogens. Cases peak in the spring and autumn, when tracks get muddy, so the laying of cow tracks has been identified as part of the solution.'

Like Richard Sainsbury, the Willoughby's successful reduction in antibiotic usage has come about through attention to management practices and a focus on cow cleanliness and hygiene.

Cutting back on milking cow tubes

There are also opportunities to take a selective approach and reduce the use of intramammary antibiotics in milking cows. This is because there is evidence which shows that Gram-negative cases of mastitis (e.g. caused by coliform bacteria) can self-cure, and therefore may not require any antibiotic treatment.

But it is not so simple to apply this approach in practice. When a mild or moderate case of mastitis is encountered at milking, it will take several days to send samples away for analysis to identify whether the causative pathogen is a Gram-negative bacterium, or not.

Endell's Peter Plate explains: 'If the mastitis is the result of a Staph or Strep infection, then early treatment is needed to ensure a good recovery rate. Sending samples away to a lab delays treatment and this would be detrimental if it wasn't a coliform case.'

'However, there are test kits available in the USA, and soon arriving here in the UK, which allow farmers to identify the causative bacteria on-farm, and make informed choices on treatment options in 24 hours.'

'In a trial carried out in the USA, the use of milking cow tubes was halved through using this technique, without detriment to cure rates, mastitis incidence or milk quality.'

The Endell Veterinary Group has obtained funding - from the Soil Association and the Duchy Originals Future Farming Programme - to run a trial to evaluate the success of using one of these test kits.

Peter explains: 'We are recruiting eight organic farms, all of whom milk record, to take part in the year-long trial. Participants will be given training on taking a sterile milk sample, and shown how to spread it onto

special 3-section agar plates which are incubated for 18-24 hours.'

Each section contains a different growth medium; farmers will be shown how to differentiate whether the cause of mastitis is due to an infection of Staphylococci or Streptococci/Enterococci (Gram-positive bacteria), or of coliform bacteria like *E.coli* (Gram-negative bacteria), as shown in figure 1.

'From this knowledge, they can then choose to treat with antibiotics, or to just monitor the situation.'

'The incubation period will mean there is one day lost between discovering the problem and treating it. So this trial will test whether this approach can be used without affecting treatment success, recurrence rates or cell count levels.'

A similar trial is to be run with non-organic farms.

Peter adds: 'The ultimate aim is to see whether the usage of milking cow tubes can be reduced without detriment to cow health. On the farm, this will have financial benefits for farmers in reduced medicine costs, less milk discard, and a reduced risk of antibiotic failure. From a wider perspective, reducing antibiotic usage in the dairy industry enables producers to proactively meet the demands of milk buyers, consumers and governments.'

