

Mastitus Control

Appropriate dry cow therapy at drying off (By Pdraig Hyland)

Appropriate dry cow therapy is still one of the corner stones for treating existing subclinical mastitis; preventing new cases of clinical and subclinical mastitis and is a key critical control point of any mastitis control plan. However, the traditional practice of blanket treating all cows with the same product, year-in year-out is outdated. Here we look at why dry cow treatment is so important and give guidelines for all farmers to follow when taking part in this key process

The case for treatment at drying off

The treatment of existing cases of subclinical mastitis at drying off in order to increase the cure rates during the dry cow period has long being recognised as one of the best ways to reduce the incidence of subclinical mastitis in the herd. Appropriate dry cow therapy is proven to help eliminate infections picked up during the lactation and also has being shown to have a positive effect on yield in the following lactation. During the dry cow period, the udder naturally will try to heal and rest in advance of the next lactation. With appropriate dry cow therapy, we aim to help the udder rid itself of chronic infections more efficiently. A good guide to assess the efficacy of your dry cow protocol for treatment of existing infections is that there should be at least an 85% cure rate of clinical mastitis over the dry cow period. In other words, 85% of cows that have a SCC of greater than 200,000 at drying off should have reduced their cell counts to below 200,000 after calving.

The benefits of prevention

Using a suitable dry cow treatment for the prevention of new cases is important both in the dry cow period and in the subsequent lactation. Research has shown that pathogens picked up in the dry cow period cause clinical infections in the next lactation. Therefore preventing infections in the dry cow period is critically important for udder health and milk quality in the following lactation. The reasons for infections coming into the udder during the dry cow period and remaining dormant until into the next lactation are complex, but critical factors include:-

- Bacterial requirement of iron to replicate and
- The immune status of the cow.

Bacteria that enter open teats during the dry cow period may not cause mastitis immediately because they require Iron to replicate. The udder during the dry period contains an enzyme known as Lactoferrin, which binds all of the Iron available, making it unavailable to bacteria. However, Lactoferrin is released within colostrum, making Iron freely available within the udder again, allowing bacterial growth. Mastitis subsequently develops around calving or in the following lactation.

Another reason for development of increased mastitis cases post calving is that the cow, like all mammals suffers a reduction in its immunity at calving, thereby increasing her susceptibility to infection.

Modern Farming presents Difficulties for the Modern Cow

The preventative aspect of dry cow therapy is primarily associated with preventing disease that occurs largely as a result of modern farming. Cows today are producing greater quantities of milk in comparison to their ancestors. Additionally, increased flow of milk, and the increased size of their teat canals mean that cows cannot seal their teats naturally after drying off. Cows' teats therefore, will be open for large parts of the dry cow period if not sealed with a teat seal. Cows are currently kept at much higher stocking densities and the chances of open teats coming into contact with organic matter (cow dung!) are substantially higher than those faced by their ancestors wandering in the meadows of yesteryear. Simple ways of measuring the efficacy of your dry cow protocol for prevention are to count the number of mastitis cases in the dry cow period and early lactation, and also measure the proportion of cows that have increased their SCC during the dry cow period. If more than 10% of Cows have gone from a SCC of below 200,000 SCC to over 200,000 then the dry cow period protocol was not successful in preventing new infections

Antibiotics for Treatment and prevention: Seals for Prevention

In cows with subclinical mastitis, the selection of a dry cow antibiotic has to be done carefully. This is to ensure the formulation chosen has the best chance of eliminating existing infections. The antibiotic chosen must treat existing mastitis but also prevent new infections. Internal teat sealants have become increasingly important for this preventative role, by physically blocking the teat end for the duration of the dry period.

Selective Dry Cow Therapy

Selective dry cow therapy tailored to suit each individual cow is increasingly seen as the gold standard method of working. This is in contrast established practices where blanket use of DCT was practically universal.

The benefits of individual cow therapy include:

- Medication can be tailored to suit the dry cow period length of individual cows
- The bacteria present in that cow's udder can be targeted with a suitable antibiotic tube
- The correct preventative tube can be used, if prevention is the highest priority
- The unnecessary use of some classes of antibiotics, such as newer generation cephalosporins can be avoided and restricted to use where needed

Records Essential

For selective dry cow therapy to achieve optimal results, the farmer has to know as much as possible about what is going on in the udders of all of his cows. Thankfully, with modern milk recording and computer technology this is becoming ever easier. Farmers who are milk recording will know the SCC of all cows and should be recording all mastitis cases. Sampling of clinical cases is of critical importance as an aid to help the selection of dry cow therapy for use in advance of the following dry off period. In other jurisdictions, there is a legal obligation to obtain a milk sample and subsequent culture and sensitivity on all cows before justifying each cow's therapy on a case-by-case basis. It is very likely, that this regime will be enforced here in the near future.

Antibiotic Free Dry Cow Period for some cows?

Many farmers already decline to use any dry cow antibiotic on individual cows, merely relying on aseptic internal teat sealant application to prevent new infections during the dry cow period.

This can be successful but strict criteria must be applied before considering:

- Candidate cows have to be from low cell count herds(<200,000)
- Candidate cows have to be free of clinical mastitis for the entire previous lactation
- Candidate cows should have a low cell count, ideally <100,000 but most definitely under <200,000 for the entire lactation
- Candidate cows' four individual SCC should be known. Use of a CMT test to verify all 4 quarters are mastitis free is a great tool
- The application of internal teat seals has to be completely aseptic and the cows should be observed closely post drying off for several days, twice a day, to ensure no mastitis is developing. This is important because no seals on the market have any antimicrobial properties and all farmers are aware about the devastating effects of a case of *E. coli* mastitis can have on a cow in the dry period or after calving, if not spotted in time.

Rest of herd

1. Culling always should be considered for persistently Infected Cows

Some cows should not be persisted with if they have had repeated cases of mastitis over the lactation; if they are older animals or if stubborn pathogens such *Staphylococcus aureus* has been cultured this is particularly true. These cows should, on veterinary advice, be culled from the milking herd rather than treated with poor chance of success.

2. Always use a teat seal

There are several seals on the market with a proven track record of many years successful use. They can be used with a wide variety of antibiotics. I advise

farmers to always seal all of their cows' teats as part of their dry cow strategy to prevent new infections during the dry cow period

3. Aim carefully

There are many factors to decide on when deciding on appropriate dry cow therapy which is beyond the scope of this article. Broadly speaking the antibiotic used should be administered with specific bacteria in mind. Cloxacillin or Cephalosporins show the best activity against *Staphylococcus aureus*. Many types of Penicillin are highly effective against *Streptococcus uberis* while Aminoglycosides including Neomycin, Framycetin and Dihydrostreptomycin are particularly effective against infections caused by *E. coli*.

Dry cow therapy is probably one of the few instances where the use of several different antibiotics, in a single product, is justified in order to optimise the drugs' spectrum of activity and presentation form for the combination of pathogens often involved. For example, if a farmer had ongoing *E. coli* problems in early lactation and *Streptococcus uberis* infections in the herd; use of combination penicillin and aminoglycoside formulations can be justified. In this case the aminoglycoside will help prevent *E. coli* while the penicillin components will fight existing Streptococcal infections. Broad spectrum cephalosporins such as Cefalexin

And Cephalonium and newer generation ones like Cefquinome also give efficacy against *Staphylococcus aureus* and are also important products for dairy farmers.

Use your Vet to work out the optimal drying off Protocol as part of a Mastitis Control Plan

Always engage with your vet to work with you to establish what is best for your farm and cows. Vets are more highly trained than ever before and are best placed to advise you on all mastitis related issues. Dry cow antibiotics and teat sealants are prescription only medicines and the optimal way to ensure their efficacy and future availability is to work closely with your vet on a regular basis. This will also ensure that an optimal dry cow treatment is just one part of a full year round effective mastitis control plan.

This comes to you from *Padraig Hyland, Technical Veterinary Manager with Blmeda.*