Would you make a good dairy detective?

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Experts agree that the most cost effective way to control mastitis is to target the trouble spots in the production cycle. So, what are the vital clues that could lead you to solving those mastitis cases in your herd?

Every dairyman knows that mastitis can have a huge impact in terms of lost production, reduced quality, increased labour, veterinary bills and replacements.

It cannot be eradicated completely but it can be kept under control if you know what the root cause is. So, do you really know where the mastitis cases in your herd originate?

The key is in the pattern of infection. Most cases of clinical mastitis are caused by bacteria picked up from the environment. There are three danger periods when cows are most vulnerable to these bugs:

- During milking (if teat preparation is sub-optimal).
- After milking (if the cow lies down in a dirty area with open teats).
- During the dry period.

Environmental mastitis is seen mainly at housing and calving, so if you were to record the number of cases month by month you would expect to see a pattern similar to that in Fig. 1, which is taken from a real herd in the UK.

Although it is possible for outbreaks of environmental mastitis to occur during the summer as a result of cows getting very dirty at pasture, this is the exception.

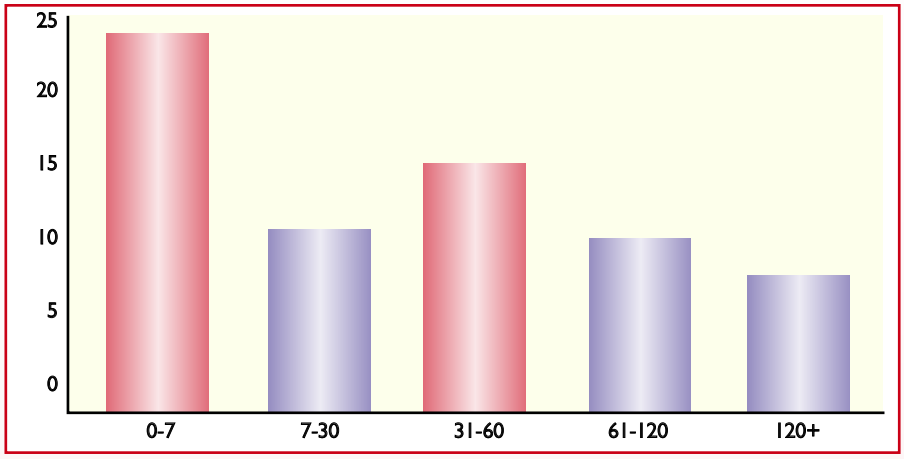

Fig. 2. Mastitis and days post-calving.

Like all good detectives, farmers need to keep a record of the evidence in order to solve the case.

Cell counts, Bactoscans and mastitis rates, recorded month by month, and ideally, for each individual animal, can give vital clues to the underlying cause. Farm records are the surest way to get a conviction.

Search for clues

The timing and presentation of clinical cases can provide clues to the cause. For example, if the cow is producing watery milk then it is most likely caused by the so called coliform bacteria, such as E. coli, which are very common in the general farm environment.

These bugs multiply very rapidly in the udder and then die, releasing a toxin which causes the clinical signs of mastitis.

Toxic mastitis that occurs around the time of calving is most likely to be caused by E. coli. However, coliform infections can vary from very severe (possibly fatal) down to very mild.

Coliforms can inflict a massive amount of damage on the udder but as mastitic milk is discarded and not added to the bulk tank, the herd cell count will remain unchanged. If your herd has a cell count under 150,000 then it is highly likely that the majority of your clinical mastitis will be due to coliforms.

If your herd has a high cell count then this tells us there is a problem with subclinical mastitis. A common bug that causes high cell counts is Streptococcus uberis. This bug is also picked up from the surrounding environment and often associated with straw based systems. Again, infections are most common during the housing period, but outbreaks can occur when cows are at pasture.

Strep. uberis can cause both clinical and subclinical infections. If chronic infections occur, cows end up with high cell counts and this will increase the whole herd cell count if the problem is widespread. If individual cows suffer from repeated episodes

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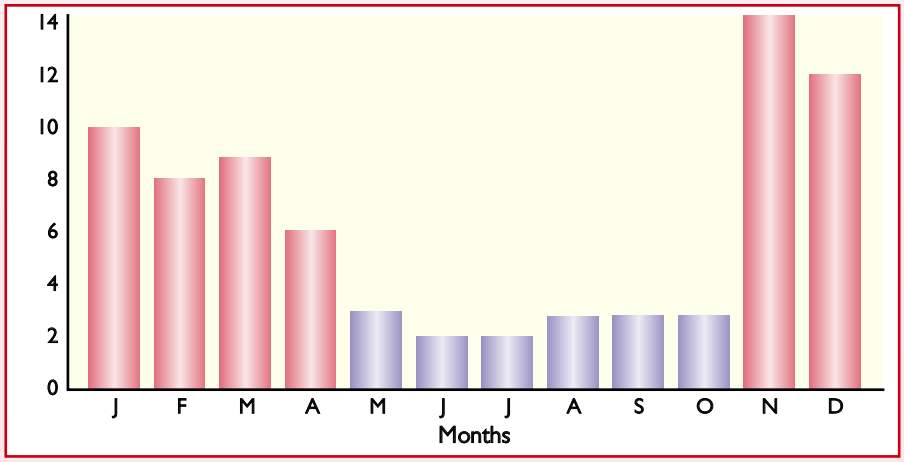
Fig. 1. Mastisis incidence by month.



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of clinical mastitis in the same quarter, then this suggests that Strep. uberis or Staph. aureus (this lives only in the udder and can be very difficult to cure) is involved.

This happens because treatment has not managed to eliminate all of the bugs from the udder and those that are left can start to multiply and cause a relapse – despite the fact that the milk appears normal. These cases highlight the difference between clinical cure and bacteriological cure.

The best way to identify the cause of mastitis in the herd is to collect samples of milk before treatment is given. These can be frozen and then sent off for bacteriology.

However, it is important to collect samples in a sterile manner to avoid contamination, or the results will be misleading. Fig. 2 is from a herd where almost 25% of clinical mastitis cases occur within one week of calving – suggesting a major problem with environmental infections.

If the pattern of mastitis on your farm suggests an environmental cause, such as E. coli or Strep. uberis, then your attention needs to include prevention of dry period infections. Studies have shown that most cases of environmental mastitis during the first three months of lactation can be traced back to the dry period during which environmental bacteria have invaded the udder.

Treating every cow with a suitable antibacterial tube as soon as they are dried off will help remove subclinical infections picked up during lactation. However, the real problem during the dry period is the fact that many teat ends do not seal and this allows bacteria to enter the udder.

E. coli is one of the most common environmental bacteria.

Teat management

Up to 50% of teats are open one week after dry off, and almost 30% between six and eight weeks. This means that bacteria can enter the udder during the dry period and remain dormant.

Around the time of calving or in early lactation they can start to multiply and cause environmental mastitis. The only way to ensure that udders remain sealed off from the outside world throughout the dry period is to use an internal teat sealant such as OrbeSeal immediately after the antibiotic tube. Dry cow therapy does not prevent all new infections from entering the udder.

Farms that have an environmental mastitis problem can expect to see a 25-30% fall in the number of clinical cases if they use a combination of dry cow therapy and OrbeSeal.

Other routines that can help reduce mastitis rates in conjunction with an internal teat sealant include keeping animals in a clean environment (cows' teats and udders should always look clean, if not their environment is inadequate) and pre-dipping. Fresh feed should be offered after milking so cows remain standing while the teat canal closes.

Machine maintenance

Finally, take a careful look at the milking equipment. Badly adjusted or neglected equipment can damage teat ends and be the cause of infections. Milking machines should be checked and serviced regularly and any worn parts replaced immediately.

Targeting the high risk times during the production cycle means that mastitis can be controlled more cost effectively. The high risk areas will vary from herd to herd but can be determined by looking for tell tale patterns and by involving the veterinarian and laboratory services.

But, like real detective work, it requires a combination of know how and instinct based on years of working in the area. ■