

The war against mastitis – where to begin?

It is not uncommon for a dirty jam jar of milk to be brought into an SAC Vet Lab and the question asked, “What tube should I use?” Unfortunately this sums up the approach to mastitis on many farms – reactive rather than proactive.

For every case of mastitis identified in the parlour there are most likely several more cows with high cell counts, even though their milk looks normal. But, all too often vets are only asked to treat the problem cows rather than preventing mastitis occurring in the first place. To combat mastitis everyone on the farm needs to take an interest and play a part.

Mastitis can be divided into different categories depending on where the bacteria come from and when the infections occur. It can be predominantly an **environmental** problem where the bugs come from the cows’ bedding, passageways, collecting yards, tracks or pasture. Where the cows themselves are the source of the bacteria, then the problem is **contagious**.

The infection can predominantly be picked up during the **dry period** or when cows are in **lactation**. In some herds the pattern of mastitis is **seasonal** with a higher incidence of cases when cows are housed or when they are at grass.

Mastitis and the cow

The bacteria that cause mastitis are present on all farms but not all cows will get the disease. So, why do some cows succumb and others don’t? Cows have several levels of defence to stop bacteria getting into the udder:

- The thick teat skin and narrow teat canal form an anatomical barrier to minimise the chance of bugs entering.
- Specific cells and proteins are produced by the body’s immune system to kill any bacteria that do make it to the udder.

However there is a balance between challenge and defence - and if there is an overwhelming bacterial challenge or a weak defence then disease will occur.

- Sources of bacterial challenge include the environment and other cows:
 - A cow that lies in the passageways has more dung around the teats than a cow that lies in a well bedded dry cubicle. Dung contains millions of bacteria such as *E. coli* which could invade the udder. In the parlour these bugs can be forced up the teat canal by the milking machine.

- Bacteria such as *Staphylococcus aureus* can be spread in the parlour from one cow to the next on milkers' hands or machine liners. These bacteria can slowly grow up the teat canal.
- Poor defences can be due to anatomical issues or compromised immunity:
 - If there is damage to the teat end the canal may not close properly and bacteria will be let in.
 - A cow that is in severe negative energy balance may not have a fully working immune system to fight disease.

Investigating a problem

Before treatment or control of mastitis is considered the main cause of mastitis on the farm should be investigated. Not all farms are the same and different farms will have different risk factors to address. In an ideal world all aspects of the farm environment, cow management and parlour routine would meet the gold standard. In reality this is not the case so it is important to know which areas to target in order to make a difference.

- Examination of records.
 - Analysis of monthly individual cow somatic cell counts (ICSCC) allows trends to be picked up. The number of cows picking up new infections can be assessed by seeing if cows go from having a cell count of below 200,000 cells / ml one month to above 200,000 cells / ml the next month. The percentage of the herd with chronic infections can then be identified.
 - These records can also be used to assess the effectiveness of dry cow therapy. If cows were dried off with a high cell count and calve down with a high cell count dry cow therapy has failed to be effective.
 - These records also allow us to see if cows are picking up new infections in the dry period.
 - By looking at several months of data it may become apparent that problems occur predominantly at one time of year. Links may be made between a management change and an improvement in cell counts.
- Accurate recording of clinical cases
 - The factors responsible for clinical cases of mastitis may be different to those responsible for high cell counts. Indeed, a farm may have a consistently low bulk cell count reading but have to treat many cows for mastitis.

- analysis of this data allows these factors to be taken into account and will give more evidence of where disease is likely to come from.
- Submission of milk samples to the laboratory
 - When milk samples are collected it must be done in a sterile manner to ensure that misleading results are not obtained.
 - Milk samples from clinical cases can be taken before treatment, frozen and then submitted as a batch so that an overall herd picture is seen rather than just a snapshot.
 - High cell count cows should also be sampled. Ten samples from cows with three readings over 200,000 cells / ml should give a representation of the bugs responsible for subclinical cases.

Mastitis is a complex problem that costs most herds thousands of pounds every year. It is significant enough to warrant spending time on getting to the root causes: Collect data on cell counts and clinical cases regularly and set time aside to review it with your vet. Have an open mind about what improvements could be made to your system.

Most of all don't accept that high levels of mastitis are inevitable and don't wait until you are being penalised before you do something about it.

Helen Carty
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Is there a problem in my herd?

If the answer to any of these questions is YES an in-depth mastitis investigation with your vet is advised.

- Is the bulk tank 3-month rolling mean >200,000 cells / ml?
- Do more than 25% of cows in the herd have cell count readings over 200,000 cells/ml?
- Is the number of clinical cases of mastitis over 30 cases /100 cows / year?
- Do more than 25% of the cows in the herd develop clinical mastitis each year?