7 reasons mastitis is more challenging in automatic milking

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Automatic milking systems are growing in popularity due to the lifestyle benefits they can afford farmers. But independent research shows udder health can deteriorate when farms transition from conventional milking systems (CMS) to automatic milking systems (AMS).

Tom Greenham from Advance Milking says for a significant number of herds this challenge can last years, not just months, if farmers do not acknowledge the risk.

But it is not all "doom and gloom", and there are measures that can be put in place to overcome this challenge, he adds.

At the recent British Mastitis Conference, Mr Greenham discussed the risk factors that can jeopardise udder health and what farmers can do to overcome these.

1. Milking frequency and interval

In AMS herds, the intervals for milking are highly variable between cows. There is a tendency towards more frequent milking (2.5-3 times/day) and shorter intervals in between.

Studies have demonstrated that more frequent milking can be beneficial to udder health, but irregular milking intervals are associated with clinical mastitis in AMS. These irregular intervals can lead to increased intramammary pressure and milk leakage, outweighing the potential benefits of higher milking frequency.

What to do:

- Look at data to identify cows that commonly have irregular intervals

- Get milkings as regular as possible by optimising box robot visits during quieter periods

- Add extra collections: create a list of overdue cows and push them into the box

- Build a fetching pen to make fetching cows less time consuming.

2. Infrastructure

Sheds housing AMS are never empty of cows, so it can be more difficult to keep passageways and feed areas clean. Some areas of the building can be inaccessible to automatic scrapers, such as passageways or the entry and exit areas of the robot.

This can present challenges for cow cleanliness, which is critical to udder health.

Lameness can also be a problem. Slatted floors are popular in robotic sheds, but these can cause increased levels of lameness and reduced mobility, which then reduces milking visits and affects udder health. Lame cows also queue at the robot more

often and are displaced by dominant cows, which exacerbates cleanliness issues.

Foot-baths are commonly sited at the exit of the robot, but they can be a significant source of bacterial contamination because there is a "splash risk' when teat ends are still open.

What to do:

- Review building layout and slurry management to keep feet, legs and udders clean

- Consider running multiple robotic scrapers for larger buildings
- Manually clean areas that can't be reached by automated systems.

3. Trace element provision and disease

Studies have shown trace element imbalances can be found in AMS where concentrate is used as a tactic to increase visits.

In this scenario, cows get more of their concentrate in the box than in their partial mixed ration (PMR). AMS parlour cake is often lower in minerals to encourage visits by improving palatability, and deficiencies in selenium have been found in AMS herds. Other studies have found positive correlations between low selenium intake and higher levels of clinical mastitis.

What to do:

- Monitor trace element deficiencies
- Ensure sufficient mineral provision from the PMR to reduce the need for mineralised concentrate.

4. Teat hygiene pre-and-post milking

Robotic teat cleaners currently cannot detect if teats are dirty or clean and adjust disinfection accordingly. This means heavily soiled teats do not receive adequate cleaning.

There are no clear advantages between brushes and dip cups. If teats are heavily soiled, brushes tend to give a better reduction in bacteria levels, but if teats are mildly or moderately soiled, teat cups can work better.

Teat cups can be kicked off by agitated cows and brushes can have trouble locating teats accurately, especially if the robot arm height setting is inappropriate for the udder height.

Post-milking, the teat coverage by spray systems can also be highly variable.

What to do:

- Make sure udder hair is trimmed so the machine can detect teats effectively

- Review the placement settings of the robot arm regularly

- Double the pre-milking routine: cleaning teats twice improves hygiene and milk let down

- Clean pre-milking equipment in between milkings.

5. Machine hygiene

Higher number of cow passes in AMS, compared with CMS, increases the potential for contamination with contagious pathogens such as Staphylococcus aureus.It is likely that 40-60 cows are milked through the machine before it is fully cleaned, and more cows are milked by the same set of liners.

What to do:

- Carry out routine or quarterly monitoring
- for Staphylococcus aureus and Streptococcus agalactiae: early detection will make it easier to prevent them spreading
- In larger herds, consider splitting the herd into infected and non-infected groups and use separate boxes
- Maximise cleaning regimes – sterilise
- liners and teat prep apparatus between each cow and increase the frequency of box washes.

6. Milking conditions

AMS technology tends to give a gentle milking with improved milk let down and a reduction in overmilking. This is because the machines are highly consistent.

However, if clusters are incorrectly positioned due to cameras or lasers being knocked out, there can be increased failure to milk out quarters, which can lead to clinical mastitis.

Sometimes human error is to blame for poor milking quality. Some farmers reduce the lag time between teat stimulation and the start of milking because they incorrectly think it reduces box time. This is a false economy. Skimping on teat preparation can actually increase box time because milk flow rates drop drastically.

What to do:

- Get a dynamic test done to check machine settings are consistent and gentle to provide an effective, healthy milking

- Adjust settings to allow cows to return to the box quickly if they have a failed milking

- Minimise unsuccessful milkings by adjusting the positioning settings and keeping udders free of hair.

7. Mastitis detection

The detection of mastitis is an on-going challenge for all robotic manufacturers. Relatively low specificity values mean a high proportion of the herd can be incorrectly flagged as having mastitis.

This can lead to farmers either overtreating or ignoring warnings, which means mastitis goes undiagnosed, leading to poor treatment success.

What to do:

- Fine-tune the alert settings and judge them in the context of other information such as cow behaviour to reduce false positives

- Minimise mastitis rates to reduce detection challenges.