

Mastitis management

Staphylococcus aureus

Overview

Staphylococcus aureus is a common cause of mastitis. Most herds will have some cows with *Staph. aureus* infections. With good management, these bacteria have minimal impact. But if not well managed, infections may spread from cow to cow.

- A bacterium commonly found on skin, in nasal cavities and other sites, of cows and people.
- Can transfer from cows to people (zoonosis) and from people to cows.
- About 85% of herds have some cows with these bacteria in their udders.
- Usually makes up less than 10% of clinical mastitis cases but can be more during outbreaks.

This factsheet includes

Prevent

Find

Treat

Likely outcomes

- New infections are more likely to cure than older, chronic infections.
- Infections can be clinical, of short duration, or become sub-clinical and chronic, lasting weeks or months, with bacteria shed intermittently from infected quarters.
- Tends to be more common in older cows.
- Cows can become infected at any time in lactation, or in the dry period.

Likely impacts

- Can be easily tolerated in a herd where infection rate is low, and prevention of spread is well-managed.
- Can have significant impacts where prevalence is high and preventative measures are poor.
- Mastitis affects cow welfare, takes time and energy to treat and has a significant financial cost.

Always discuss the best approach for dealing with this form of mastitis in your herd with your vet.

For more information, refer to SmartSAMM at dairynz.co.nz/mastitis

Prevent

Effective prevention relies on minimising the spread of the bacteria from cows with pre-existing infections to other cows.

Key Points

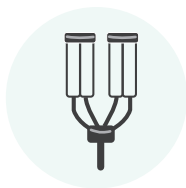
- Main source of the bacteria is milk from other infected glands, with transfer via contaminated milk on liners or on hands.
- Good hygiene at milking and effective teat spraying can reduce the risk of cow-to-cow spread.
- Rough teat skin and teat end sores harbour the bacteria and increase the risk of infection. Use teat scoring to assess teat condition and identify ways to improve teat skin health.

Quick tips for preventing and managing *Staph. aureus* mastitis



Effective Teat Spraying

Ensure every teat receives sufficient coverage of an approved teat spray, with emollient, to reduce spread by up to 50%.



Minimise Teat End Damage

Prevent through correct pulsation and vacuum settings, rubberware maintenance and reducing overmilking (e.g., use MaxT).



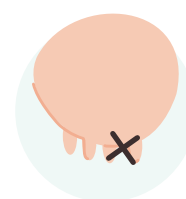
Use Hygienic Milking Practices

Maintain clean hands/gloves. Clean and dry dirty teats before applying teatcups. Milk infected cows last to reduce the spread of bugs.



Treat Responsibly

Treat clinical cases with antibiotics when detected. Sub-clinicals best cured with dry cow antibiotics (DCAT) at dry off.



Manage Chronic Cases

Options include drying off affected quarter if no response to treatment, early dry off of cow, or culling (e.g. if 3+ cases in a lactation or 2 seasons with high SCC).

Ways to minimise spread and prevent new infections include:

Reduce over-milking	Ensure cows are not over milked. Identifying a herd's maximum milk-out time (MaxT) helps determine an appropriate point when cups should be removed after milking. This results in shorter milking times, which in turn reduces teat end damage and the risk of new infections.
Milking order	Milking cows last that have a high somatic cell count (SCC), or are known to be infected, will help reduce cow-to-cow spread of infection during milking.
Herd testing & other tests	Regular herd testing can identify high SCC cows that are likely to have <i>Staph. aureus</i> infections. This can be confirmed using diagnostic tests for the bacteria. Manage these cows by milking last, drying off early, or culling to reduce the risk of infection spreading to other cows.
End of season review	Work with your vet to achieve your milk quality goals. This could include a review of mastitis cases, herd test and diagnostic test results, teat condition, teat spraying and milking routines.
Avoid feeding waste milk	Feeding waste milk to replacement heifer calves has been identified as a risk for spreading bacteria from the milking herd to young stock.
Operate a closed herd	Rearing your own replacements or purchasing animals only from herds that have evidence of a low SCC and clinical mastitis helps avoid introducing <i>Staph. aureus</i> into a herd.

Find

Cows with persistently high SCC may be infected with *Staph. aureus*. This can be confirmed using bacterial culture or other diagnostic tests. Herd outbreaks typically require cultures from more than 20 cows to make wise decisions.

Key Points

- Clinical cases typically show mild signs, but can occasionally show systemic illness or black mastitis.
- Cows show no visible signs if they have sub-clinical mastitis.
- Use Rapid Mastitis Test (RMT) on cows with high SCC (e.g. over 200,000 cells/mL) to find quarters likely to have new infections.

Note that:

- **Clinical cases** are those where signs of mastitis are visible by looking at the cow, quarter or milk.
- **Subclinical cases** aren't visible by looking at the milk. A test, such as RMT, is required to find changes in the milk.
- **Discuss with your vet** the best options for your herd for management and treatment of cases where *Staph. aureus* has been identified.

Techniques to find new cases of mastitis

Foremilk stripping	Clinical cases are found by manually stripping milk from the teat and looking closely for clots, lumps, or discolouration. The type of bacteria causing mastitis cannot be distinguished by the type of clots or changes in the milk. Strip cows that are behaving differently at milking time or are not milking out as fully as usual. Always strip if the quarter is hard, hot, red, or swollen, or if the cow is showing signs of pain in the udder.
Rapid Mastitis Test (RMT)	This test is a cow-side test for the presence of high SCC. It is often used to check cows before they join the milking herd or to check cows with a new high SCC at a herd test, to find the likely infected quarter(s). Any cow or quarter showing a new positive RMT test should be manually stripped to check for clinical signs. Milk from high SCC quarters may also be further tested for <i>Staph. aureus</i> .
Conductivity test	Subclinical cases can be found by using hand-held devices or in-line systems in the milking machine to check for salt ions in milk, which increases conductivity. Any cow detected with high conductivity should be manually stripped for clinical signs, or RMT tested to find new high SCC quarters.
Individual cow SCC	Typically, cows with a new high SCC (e.g., over 200,000 cells/mL) should be manually stripped to find new clinical signs. Cows likely to be chronically infected with <i>Staph. aureus</i> are those with persistently high SCC (typically 200,000 to over 1 million cells/mL) in multiple herd tests. Some cases can persist into the following lactation, despite dry cow treatment. Cows with persistently high SCC are good candidates for further testing for <i>Staph. aureus</i> .

Diagnostic tests for the presence of *Staph. aureus* include:

- **Milk culture** - This is the most common way to confirm the presence of *Staph. aureus*. Several products are available commercially or your vet can arrange testing. Samples can be collected from clinical cases before treatment, or from cows with a high SCC. Bacterial culture is best done on milk samples collected hygienically from an individual quarter. Some screening approaches use samples collected from the bulk tank or from composite samples (i.e., milk pooled from all 4 quarters of a cow).
- **PCR** – Polymerase chain reaction (PCR) is a test for the DNA of *Staph. aureus* and tests are available commercially. Testing should be targeted towards cows with a high SCC to confirm the presence or absence of *Staph. aureus*.
- **Antibody Tests** – These involve testing high SCC herd test samples for the presence of antibodies that are specific to *Staph. aureus*.

Treat

Discuss the best treatment approach with your vet. Factors to consider include:

- A cow's age, pregnancy status and production levels.
- Previous SCC history.
- Treatment history in current and past lactations.

Key points

- Most herds have cows with *Staph. aureus* subclinical mastitis. Finding and diagnosing individual cows with *Staph. aureus* mastitis should be based on likely impact of such cases in a herd.
- A single diagnosis of *Staph. aureus* is rarely a valid reason to cull a cow. A more profitable approach will be to identify the main causes of new infections and to improve prevention.
- Consult the animal health treatment plan approved by your vet for the correct treatment approach. There are different options available for clinical and subclinical cases.
- Some strains of *Staph. aureus* may be more resistant to penicillin than other strains, so may be more difficult to cure.
- For farms struggling with mastitis, your vet can help you assess teat condition, interpret bacterial culture results and check for antibiotic resistance.

Treatment approaches include:

Lactating cow intramammary antibiotics	Clinical cases of mastitis may be treated with lactating cow antibiotics and pain relief when first detected. But cure rates can vary – higher cure rates are more common for infections in younger animals, or for infections of shorter duration (i.e., weeks rather than months).
Dry cow antibiotic therapy (DCAT) at dry off	All cows with <i>Staph. aureus</i> should be given the benefit of DCAT as the longer period of treatment is more likely to lead to a cure. Cows with a high SCC in a lactation are candidates for DCAT. If no improvement in SCC in the following lactation, these cows may be chronically infected with <i>Staph. aureus</i> , and are candidates for culling.
Drying off the affected quarter	This approach can be used when an individual gland has not responded well to treatment, such as following repeated treatment for a clinical case. Steps need to be taken to ensure that the gland is not milked again in the same lactation.
Culling the affected cow	Cows with persistent infections are candidates for preferential culling. Use health history such as clinical records, SCC results, DCAT history, age, production, and stage of lactation to select cows. Criteria include: <ul style="list-style-type: none">• Cows with their third clinical case in a lactation or• Cows with high SCC (i.e., above 200,000 cells/mL) in two consecutive lactations, that received DCAT in the intervening dry period.

NEXT STEPS

- Work with your farm vet and farm team to develop a management and prevention plan for *Staph. aureus* mastitis, suitable for your herd. Additional support is available from accredited vets.
- Ensure your farm team understands the value of hygienic practices in the farm dairy, and teat spraying accuracy.
- Schedule regular teat condition checks, ideally monthly, as well as daily, weekly and monthly checks of milking machine function.
- Review herd test results and consider diagnostic tests to identify the common causes of mastitis in your herd.
- Investigate shorter milking times, or MaxT to help improve milking efficiency, reduce overmilking and thereby minimise teat end damage.