



***Staphylococcus aureus* – A practical summary for controlling mastitis**

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Staphylococcus aureus (*S. aureus*) mastitis is extremely difficult to control by treatment alone. To date, successful control is gained only through prevention of new infections and culling of infected animals. All staphylococci bacteria are Gram positive and similar in structure to *Streptococcus* spp. Milk culturing laboratories can distinguish *S. aureus* from other staphylococci using a coagulase test. Organisms with characteristics of staphylococci and a negative coagulase test are called “coagulase negative staphylococci”, which is commonly abbreviated as CNS. Those that display a positive coagulase test result are considered *S. aureus*.

Where are these organisms found?

Reservoirs of *S. aureus* are **infected udders, teat canals, and teat lesions**, but are also commonly found on teat skin, muzzles, and nostrils. The bacteria are spread to uninfected quarters by teat cup liners, milkers' hands, washcloths, and flies. Staphylococci can colonize damaged teat skin and teat lesions, which increase the chance of teat canal colonization and subsequent udder infection. Furthermore, **heifers are a reservoir for *S. aureus*** and can calve with an infection, which may be unknowingly spread to uninfected herd mates.

How does *S. aureus* spread to the mammary gland?

The spread of *S. aureus* can occur through **milkers' hands, washcloths, teat cup liners, and flies**. During milking, irregular vacuum fluctuations can force bacteria up into the teat canal leading to the potential for new infection. There is considerable debate surrounding the cause of *S. aureus* infection in heifers prior to first calving, but **feeding *S. aureus* contaminated colostrum** to calves may be an important route.

How can you prevent and control mastitis caused by *S. aureus*?

Proper milking procedures including the use of efficacious **pre- and post-milking teat disinfectants** will help to reduce numbers of new infections. Important milking-time considerations, which will help reduce the spread to uninfected cows, include the **use of gloves and single use towels**, as well as milking infected cows last. Furthermore, a backflush system may help reduce bacterial numbers within the liners, but rinsing units by hand is not recommended. Though the data is limited, if a *S. aureus* problem exists on a farm, careful colostrum selection and even pasteurization, is certainly one area to consider to reduce infectious rates. Furthermore, testing of new herd mates will help to identify reservoirs of these contagious bacteria.

When are *S. aureus* mastitis infections most likely to occur?

Due to the contagious nature of these bacteria, new infections are likely to occur during lactation. **Cows in early lactation are at increased risk** for new infections due to the increased stress and immune suppression associated with the postpartum period. Cows with high milk production are not at greater risk than cows with low milk production.

How likely is *S. aureus* to cure?

Successful treatment during lactation is more likely if detected and treated early, whereas the response is lower when treating chronic infections. **New clinical infections should be treated promptly** and appropriately, especially in first lactation cows. Treatment effectiveness decreases as the cow becomes older and even as the first lactation progresses. Use of a strip cup or similar device is strongly recommended for detecting abnormal milk. The use of Dairy Herd Improvement (DHI) SCC records in addition to visual observation of fore-stripped milk and milk culture results will indicate effectiveness of treatment. Cows with a SCC of less than one million are more likely to cure an infection compared with those over this cut-off point.

With an increasing prevalence of heifers calving with *S. aureus* mastitis, many researchers evaluated the use of either lactating or dry cow antibiotic therapy to reduce infections at calving. Many producers find it easier to treat heifers closer to calving when they are readily available in a close-up pen. Therefore, treatment with a lactating cow product has proven beneficial. Treatment of heifers with a cephalosporin-based lactating cow mastitis treatment at 14 days before expected calving can reduce IMI at calving (Oliver et al., 1992).

In addition, researchers have looked at the efficacy of pirlimycin treatment both in heifers prior to calving and in all animals as an extended therapy treatment during lactation. In heifers, a single tube of pirlimycin treatment in each quarter approximately 6-12 days prior to calving reduces *S. aureus* infections at calving (Roy et al., 2007). Single quarter extended therapy with repeated label doses of pirlimycin improves cure rates. Whether these cure rates justify the additional expenses and effort, increased risk of spread to other animals in the herd, not to mention the potential risk of extra-label use and antibiotic residue, is unknown. It is always recommended to **consult your herd veterinarian** prior to using any off-label drug protocols.

Quick Notes

- *S. aureus* is a contagious mastitis pathogen spread from cow to cow at milking
- Use of gloves, efficacious pre- and post-milking teat disinfectants, and single use towels will help control this pathogen
- The younger the animal and the earlier in lactation, the better the chance for cure following antibiotic treatment
- New infections in heifers may be traced back to feeding of *S. aureus* contaminated colostrum early in life
- Antibiotic therapy of *S. aureus* yields limited success; prevention should always be the main focus

References

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