



**Wisconsin Veterinary
Diagnostic Laboratory**
UNIVERSITY OF WISCONSIN-MADISON

Mastitis: *Streptococcus agalactiae* Diagnostic Aid

Background

Streptococcus agalactiae is a gram-positive, chained coccus bacterium and the reservoir in which it is found is infected udders. *Strep. ag.* is an obligate pathogen of the udder of dairy cattle. The presence of *Strep. ag.* infections has been reduced by modern milking technologies. This bacterium still is a threat for all dairies that do not have a closed herd. *Strep. ag.* cannot persist very long outside of the mammary gland. Cattle infected by *Strep. ag.* often have more than one quarter infected.

Source and Transmission

Strep. ag. is a contagious pathogen that is transmitted primarily from cow-to-cow through contaminated milk present on milking equipment. Heifers become infected as calves due to the use of non-pasteurized waste milk containing *Strep. ag.* When non-salable/waste milk is fed it cross-contaminates the mammary gland of these heifers. These animals may then freshen with blind or infected quarters. Purchasing *Strep. ag.*-infected cows or heifers can introduce the pathogen, which can spread quickly throughout the herd when little or no mastitis control/biosecurity programs are in place. Employees can transfer the pathogen from one place of employment to another if good hygiene is not practiced.

Disease

Strep. ag. usually causes subclinical disease with periodic clinical flare-ups from mild to moderate clinical mastitis episodes. *Strep. ag.* infections cause mild udder swelling and irritation that leads to damage of the gland causing reduced milk production and elevated somatic cell counts (SCC). A reduction in milk solids may lead to income loss. A decrease in milk production from one quarter can be as high as 40% without apparent clinical signs of mastitis. Additionally, some infected quarters will cease production of milk all together.

Bacteria may be shed in high concentrations, which can lead to increased bulk tank bacterial counts. Very high SCC levels (greater than 1,000,000) can be seen despite low rates of clinical mastitis. This can be attributed to an infection with *Strep. ag.* Isolating *Strep. ag.* from 30 to 40 percent or more of milk samples indicates a significant non-clinical mastitis problem. Therefore, each cow with a SCC greater than 200,000 should be considered infected. Cows with SCC higher than 500,000, but the milk was culture negative for *Strep. ag.* does not indicate the cow is not infected with *Strep. ag.*. Culturing at several time points will help delineate the problem.

Treatment

Overall, *Strep. ag.* is susceptible to beta-lactam antibiotics. Treatment with intramammary beta-lactams, either in a lactating or dry cow formulations, is the most effective means to control and clear infections. Rarely, cows will fail to respond to antibiotic treatment and because of the high risk of transmission, the animal should be culled. Consult a veterinarian before starting antibiotic therapy.

Prevention and Control

There are several options to choose from when managing a *Strep. ag.*-infected herd. The urgency of the situation dictates the method used. **Emergency Program** is necessary if the two of the last four consecutive bulk tank somatic cell counts were greater than 750,000, which is a result of a confirmed *Strep. ag.*-infected cow. This treatment plan is also called a 'blitz' approach. Treating all cows and all quarters is required. Make sure to inform your milk cooperative and local veterinarian of this issue. Follow a prescribed treatment schedule and do not introduce new heifers or cows during this time, without culturing negative. A **Short-Term Program** is necessary when 50 percent or less of your herd is infected and/or your herd's bulk tank weighted SCC is ranging between 300,000 and 600,000, and there are confirmed cases of *Strep. ag.* Cull cows that have a long-term history of mastitis and have high SCC. Additionally, dry off and dry treat all cows that are within 80 days of calving. Segregate treated cows and milk them last. Treat infected cows and implement a long-term control program. A **Long-Term Prevention and Control Program** is necessary if there are several confirmed cases of *Strep. ag.*-infected cows, but few clinical cases and the weighted SCC is between 200,000 to 400,000. If implemented, *Strep. ag.* infections can be eliminated over a two- to three-year period without extensive antibiotic therapy.

A good **Long-Term Prevention and Control Program** is necessary to address *Strep. ag.* infection, as it is possible to eradicate this pathogen, since it only resides in the udders. Excellent pre- and post-milking teat sanitation, excellent milking hygiene including glove wearing, using single-use towels and maintaining milking equipment are necessary for reducing transmission of this and other pathogens. Segregate all cows and develop a plan for housing and milking. Stop purchasing animals until prevention practices are in place. Purchased animals should be tested for contagious pathogens and quarantined until tests are received. Regular bulk tank culturing is an effective way to monitor for the presence of *Strep. ag.*

References

J Hogan, R Gonzalez, R Harmon, S Nickerson, S Oliver, J Pankey, and K Smith. Laboratory Field Handbook of Bovine Mastitis. National Mastitis Council, Inc. Revised 1999.

Mastitis Pathogen Factsheet #4 *Staphylococcus aureus*. (2014)

R Mellenberger and J Kirk. (2001) Mastitis Control Program for *Staph. aureus* Infected Dairy Cows. Using Bulk tank Milk Cultures in a Dairy Practice. National Mastitis Council, Inc.