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## Mastitis: *Mycoplasma* (*Mycoplasma*) Diagnostic Aid

### Background

Due to the treatment and prevention programs set in place for *Streptococcus agalactiae* and *Staphylococcus aureus*, there has been an increase in *Mycoplasma*-induced mastitis occurrence. *Mycoplasma* are very small microorganisms that lack a bacterial cell wall and can be cultured from various locations on both the bodies of sick and healthy cattle. Several species can cause mastitis, including *M. bovis* (the most common species cultured from the udder; commensal organism of the respiratory tract), *M. alkalescens* (commonly cultured from the respiratory tract as well), *M. bovigenitalium* (commonly cultured from the reproductive tract), and *M. canadense* (commonly cultured from the joints). *M. bovis* is an important cause of respiratory disease in calves and feedlot cattle. *M. bovis* has also been involved in joint infections, as well as in abortions and ear infections in calves.

### Source and Transmission

*Mycoplasma* is considered a contagious pathogen that is transmitted from cow-to-cow by multiple means. New infections primarily occur when a newly infected animal is introduced to the herd. Mastitis can be spread by airborne transmission, through infected milk or by way of a contaminated milker's hands. Infection can occur when there is contact of an adult cow with another adult cow showing respiratory symptoms, or by interaction with a calf which may also produce respiratory disease or arthritis. Interestingly, *Mycoplasma* can be spread hematogenously, in which a cow with a bovine respiratory infection caused by *Mycoplasma* can also develop *Mycoplasma* mastitis. Bacteria can be shed in high numbers in the milk of infected animals. Therefore, the major source of transmission is the milking parlor, the milking equipment, and the personnel who are milking these animals, which can cause new infections in a short period of time. Since *Mycoplasma* is not susceptible to intramammary antibiotics, many new infections can occur in a short time period.

### Disease

The classical symptom of *Mycoplasma* mastitis is severe mastitis, where more than one quarter is involved, especially in cows that otherwise appear healthy. The milk has sandy appearance and can develop a flaky sediment in watery or serous fluid. There is typically a dramatic reduction in milk production.

### Treatment

*Mycoplasma* infections cannot be treated with antibiotics due to the lack of a cell wall. Animals that are infected should be culled/removed from the herd as they present a significant risk to other herdmates. Cows infected with *Mycoplasma* may be subclinical and the somatic cell count (SCC) is usually elevated, but not all cases may present in this fashion.

## Prevention and Control

The risk of purchasing infected cattle can be decreased by implementing mastitis biosecurity programs. Prior to purchasing non-lactating cows, bulk tank cultures from the herd of origin should be requested. Additionally, prior to purchasing lactating cows, somatic cell counts and composite milk samples from individual cows should be reviewed and diagnostically tested. Cows that calve after purchase should be isolated until a negative composite milk sample is obtained. Herds that are routinely purchasing cattle should submit bulk tank milk to monitor for *Mycoplasma* twice a month.

Good management practices of sick and fresh cow protocols will help to control the spread of this organism. Avoid housing fresh cows in the same pens as sick cows and avoid milking these two groups of cows with the same equipment. Feeding waste milk to calves is a high risk and a source of transmission of *Mycoplasma* throughout the herd, if present. Calves fed *Mycoplasma* infected milk may develop pneumonia, joint infections and head tilts related to inner ear infections.

When *Mycoplasma* is detected in a bulk tank or individual cow culture, the number of infected cows must be identified. Depending on the size of the herd, there are several approaches that can be considered. If resources allow or the herd is small, composite samples from all cows should be submitted for culture. In larger herds, group milk samples can be submitted by sequentially culturing the bulk tank during milking. Individual milk samples from cows only in the infected groups can be obtained.

As mentioned above, there is no treatment for cows that develop *Mycoplasma* mastitis. These cows should always be considered infectious, regardless of their production level, appearance of their milk or subsequent negative milk culture. In most cases, infected cows should be culled/ removed from the herd. The only exception to this is when a large proportion of a herd is infected and culling is consequently financially unacceptable. In this case, a herd specific strict segregation plan should be developed.

## References

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