



Environmental streptococci and *Enterococcus* spp. – A practical summary for controlling mastitis

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The implementation of control measures for contagious mastitis pathogens has successfully reduced the prevalence of these organisms in US dairy herds. However, the control of environmental pathogens still remains a daunting task. Environmental streptococci and *Enterococcus* spp. are a group of bacteria with similar biochemical and structural characteristics. These bacteria are Gram-positive, with a similar cell wall structure to *Staphylococcus* spp, as well as streptococci such as *S. agalactiae* and *S. uberis*. Many milk culture laboratories across the United States do not distinguish between environmental streptococci and *Enterococcus* spp. However, this document will address the inherent differences between these pathogens, and also the similarities.

Where are these organisms found?

These organisms are environmental organisms, commonly found **in organic matter including bedding**. *Enterococci* are also commonly found in **silage inoculants and associated with plant matter**, including dairy feed. Whereas, streptococci are a common bacteria in dairy cattle **manure**, and thus often found in the bedding. Poor udder cleanliness, stall management and damaged teat ends also appear to increase risk of spreading *Enterococcus* spp. and environmental streptococci to uninfected cows.

How do environmental streptococci and *Enterococcus* spp. spread to the mammary gland?

Environmental streptococci and *Enterococcus* spp. will spread to uninfected cows through environmental contact. As with all environmental organisms, maintaining a **clean and dry environment** for cows to lie in is of utmost importance. In particular, the use of inorganic bedding (sand) will reduce the environmental contamination with these bacteria. However, it is important to remember that recycled sand can still serve as a source of environmental contamination as the organic matter builds on the bedding material.

How can you prevent and control mastitis caused by environmental streptococci and *Enterococcus* spp.?

The control of environmental streptococci and *Enterococcus* spp. includes the maintenance of a clean and dry housing environment and the implementation of **proper milking procedures**. At milking time, all quarters should be forestripped, which will begin the milk let-down process. Following forestripping, the use of an FDA-approved and efficacious pre-milking teat disinfectant is particularly important for this mastitis-causing pathogen. The pre-milking teat disinfectant should remain on the teats for 30 seconds prior to removal with either a paper towel or a single-use clean and dry cloth towel. Following these guidelines, the time from start of manual stimulation (forestrip or wipe) to unit attachment should be in the range of 60-120 seconds. This will allow the appropriate time for milk letdown. Following unit detachment, the application of an

FDA-approved and efficacious post-milking teat disinfectant should be applied with coverage over at least 2/3 of the teat barrel. In herds with a particular environmental mastitis problem, the use of a **barrier teat dip** is recommended.

In addition, reducing teat end exposure between milkings, by scraping the back of cow stalls (where the udder rests), and applying fresh bedding frequently, is imperative. The **application of bedding conditioners such as hydrated lime**, are effective at reducing the bacterial load in the bedding. However, the activity of these products are short lived, and thus, frequent application is required. It is recommended that 2 lb be applied per stall and it must be applied every other day.

The use of blanket **dry cow therapy** with a long-lasting antibiotic preparation is an effective way to cure existing infections at drying off. Furthermore, studies report the use of an **internal teat sealant** will significantly reduce the new IMI (acquired during the dry period) caused by environmental streptococci. The use of an internal teat sealant, in conjunction with blanket dry cow therapy, will double the cost of dry cow treatment. However, in herds where environmental streptococci are the predominant bacteria isolated from clinical mastitis, this is an effective way to prevent new infections and cure existing infections during the dry period.

When are environmental streptococci and *Enterococcus* spp. infections most likely to occur?

New infections can occur at any time during lactation and may also occur during the dry period. However, cows in **early lactation** are at an increased risk for new infections due to the increased stress and immune suppression associated with the postpartum period. Additionally, cows are also at an increased risk for mastitis **immediately after drying-off**. Following milk cessation, cows do not experience the daily flushing of the gland and are at an increased risk for mastitis in the early dry period. Cows with high milk production are not at greater risk than cows with low milk production.

How likely are environmental streptococci and *Enterococcus* spp. infections to cure?

These infections are often difficult to cure with traditional intramammary antibiotic preparations. Some veterinarians have had greater success with systemic administration of penicillin. However, veterinary consultation is recommended prior to the start of any treatment protocol. Due to the nature of these bacteria, **emphasis needs to be placed on prevention** of these infections, rather than a focus on treatment.

Quick Notes

- Environmental streptococci and *Enterococcus* spp. are environmental organisms found commonly in manure and bedding.
- It is imperative to keep bedding clean and dry
- Use of washed sand bedding that is properly dried will help reduce the environmental load of environmental streptococci and *Enterococcus* spp.
- Proper milking procedures, including pre and post dip application are extremely important in the prevention of these infections

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