

# Developing small ruminant mastitis treatment protocols: Assisting dairies in management of milk quality

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## Abstract

Small ruminant dairies experience mastitis at a much higher rate than most producers appreciate. Intramammary infections are frequently subclinical and overlooked as such. In order to develop an effective treatment program we must first define the problem on farm, then we can create strategies for improving udder health and milk quality. This talk will cover mastitis detection methods along with various treatment programs aimed at sheep and goat udder health in backyard or commercial herd settings.

**Key words:** sheep, goat, milk quality, mastitis

## Introduction

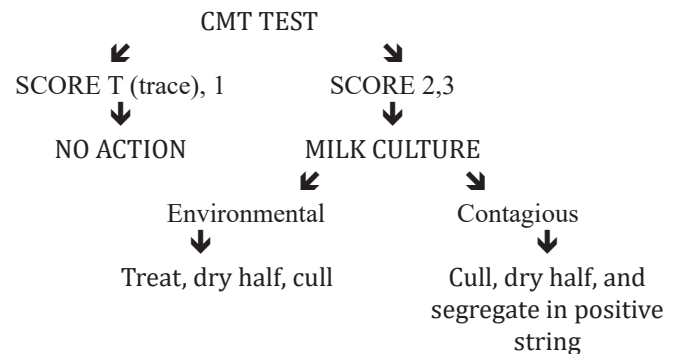
Small ruminant dairies have a perceived lower incidence of mastitis relative to cattle dairies. Many producers do not even have a hospital pen due to the lack of diagnostic capabilities, and antibiotics are not used on these operations. Unfortunately, subclinical mastitis rates are often quite high and go undetected due to the high somatic cell count (SCC) limit set for goat dairies. This talk will review methods for detection of mastitis in small ruminants, common pathogens, treatment options, and preventative management.

## Diagnosis and Management of Clinical Cases

Intramammary infections are classified as clinical (visual or physical changes to the udder and milk) or subclinical (milk appears normal, in acute phase the udder also appears normal). Both types of mastitis will elicit an elevation in the SCC of the doe or ewe. Goats and sheep commonly are infected with *Staphylococcus* spp bacteria and these cases are often subclinical. It is possible to see toxic mastitis with *Staph* spp infections similar to *Staph aureus* or *Mannheimia haemolytica* (in ewes). Aerobic milk cultures using blood agar plates are recommended for identification of bacteria in intramammary infections.

On the herd level, the use of California Mastitis Test (CMT) testing is a cost-effective, rapid test to assess SCC in sheep and goats. The same process is used as in cattle. Goats can have falsely elevated CMT scores during dry-off, and any positive test that is symmetrical for both udder halves should be verified with milk culture. A negative or

score 1 CMT should be considered clear of infection. Score 2 (and score 3, if used) is considered positive, which means they are high-SCC individuals. All positive CMT tests should be followed by a milk culture, at least in the initial phase of sampling and treating. As long as no contagious mastitis is discovered, decisions can now be made as to how to develop a treatment program.



Treatment of mastitis in small ruminants should include both intramammary tubes and systemic antibiotic therapy for best results. Unfortunately, the factors affecting treatment often surmount ideal situations. Treatment cure rates with chronic infections are low. Although short-term cures can be appreciated, udder halves that are noticeably smaller than the unaffected half will have a very low long-term cure rate. These does and ewes should be dried on the affected half. It is not uncommon to treat these halves and have them relapse later in the current lactation or in the following lactation. Nursing does and ewes will not benefit from intramammary therapy. Systemic antibiotics, anti-inflammatories, and twice-daily hand stripping to remove infected material from the udder are recommended. Antibiotics should be chosen based on bacteria present on milk culture and ability to penetrate the udder. In dairy settings, producers may opt to only treat with intramammary antibiotics. This will result in a lower cure rate, but a faster return to the bulk tank, which may be more cost-effective depending on the herd infection rate and time of the year. At high milk volumes, returning to the bulk tank as soon as possible may be necessary for cash flow reasons on the farm. Cost of therapy to the producer should always be a consideration, as well as the ability to isolate affected and treated does or ewes in a manner to prevent a milk residue violation. The Food Animal Residue Avoidance Databank

(FARAD) should always be consulted for appropriate milk and meat withhold times. If FARAD cannot provide the information required to ensure non-violatory milk withholds, then a Charm Industries antibiotic test can be performed on milk from the treated individual. Most creameries offer this service to producers upon request.

### **Prevention Strategies**

Preventative care and milk quality are areas on commercial goat and sheep dairies that vary widely. Cattle dairies have long utilized a milker preparatory system involving a predip sanitizer, stimulation of teats while wiping the sanitizer off, then pre-stripping to examine milk visually for abnormalities, either garget, blood, or abnormal milk secretions. Many sheep and goat dairies have no udder preparation protocol. Goats enter the barn, machines are attached, machines are removed after milking and the does exit the barn. There is very little opportunity for a milker to observe udder or milk issues during this type of milking routine. For this reason, subclinical mastitis rates can be very high. Teat end damage can be extreme. Milk quality counts are often near or at violation/degrade levels before producers contact a veterinarian for assistance. Treatment protocols are very important in any attempt to cure infected does and ewes. Proper milk barn management is also essential for prevention of spread from animal to animal and should be discussed while presenting treatment options. Prevention is always cheaper than treatment of individual cases, especially with the low cure rates often seen in small ruminant dairies.

As veterinarians, consideration of judicious use of antibiotics is of foremost importance. Dry treatment on small ruminant dairies can be a viable tool for treating subclinical mastitis. The effective use of CMT testing towards the end of lactation to identify udder infections allows producers to target only the animals that could benefit from antibiotic therapy. Dry treatment should only be used on farms where good identification is maintained and treated does or ewes can be housed in a manner to prevent an antibiotic residue in the bulk tank after freshening. I recommend a 1-week withhold for milk after freshening with CHARM testing beginning 5 d after kidding or lambing. No doe or ewe should enter the milk string until a verified negative milk antibiotic residue Charm test has occurred. It is not safe to use cattle withholds on sheep and goats, and milk and meat withhold labels do not exist from pharmaceutical companies for intramammary antibiotics in small ruminants.

### **Conclusions**

Sheep and goat mastitis is very similar to cattle mastitis and can be managed in similar ways. The key differences to keep in mind are the higher incidence of subclinical mastitis, lack of producer recognition, and predominance of *Staph* spp infections leading to chronic, often-incurable infections. As with any herd health program, good prevention and early detection are the primary tools needed to manage milk quality and mastitis on small ruminant operations.