

Recommendations on Control of *Mycoplasma bovis* Infection in Beef Feedlots

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Introduction

Bovine respiratory disease complex (BRDC) is caused by a variety of infectious agents and environmental stressors. Etiologic agents associated with BRDC include viruses such as bovine viral diarrhea virus, infectious bovine rhinotracheitis virus, bovine respiratory syncytial virus, and bacteria which include *Mannheimia hemolytica*, *Histophilus somni* (formerly *Hemophilus somnus*), and *Mycoplasma bovis*. Bacteria such as *Arcanobacterium pyogenes* and *Pasteurella multocida* are generally not regarded as a primary cause of disease, but contribute to the problem through the formation of abscesses and chronic inflammation of the chest cavity. Certainly, *M. bovis* is one of the most difficult of these agents to manage in that it responds poorly to treatment and can cause problems in a variety of organ systems. While it is commonly thought of as a cause of respiratory and joint disease, it also causes inner ear infections that lead to problems with balance and movement, mastitis, abortion, and eye infections that resemble pinkeye. Although it is often recovered with other pathogens, *M. bovis* is quite capable of causing disease alone. Significant outbreaks of mycoplasmosis have occurred in beef feedlots.

Diagnosis

Of primary importance is the need to confirm that *M. bovis* is causing the problem. This can only be done with the aid of a diagnostic laboratory. There are a variety of techniques available that will help with this process, but all of them require either ante- or post-mortem examination of affected animals, sample collection by your veterinarian, and submission to a laboratory that can identify the organism. *Mycoplasma bovis* is commonly isolated from cattle in North Dakota, therefore its frequency of occurrence is relatively high. Once you have established *M. bovis* as a cause, management strategies can be implemented.

Management of transmission

Mycoplasmosis is typically brought into a feedlot by a carrier animal that begins shedding the organism under stress. Stress can come in a variety of forms, but is often associated with transport, handling, significant changes in weather and crowding. Transmission of *M. bovis* in a feedlot requires nose to nose contact between animals. Depending upon the structure of the lot system, it may or may not be an easy thing to reduce this type of contact. Remember that nose to nose contact includes not just herd mates and fence line contact, but common waterers and feed bunks as well. Where possible, pen sick animals together and keep them isolated from the healthy group. What form this isolation takes is up to the producer, but try to keep an empty pen or some type of space between affected and healthy animals. If animals in the healthy group become sick, remove them and pen with the sick group. Breaking the contact is important. If there are alleyways between pens, reduce or eliminate any traffic that allows nose to nose contact between animals temporarily in alleys, and animals in adjacent pens. If you are emptying a pen that has had an *M. bovis* positive animal in it, clean up the manure and bedding and allow the pen to sit empty for as long as possible (a month if it can be managed) where ultraviolet light can help inactivate any bacteria in the environment. In summary, breaking the cycle of bacterial transmission is managed by eliminating contact between animals, cleaning up the environment, and reducing traffic in areas where even minimal contact is possible.

Therapy

What to do with the sick group can be problematic. Culling may be possible, but those animals with advanced clinical disease may not be suitable for the culling process (terminal respiratory

disease, advanced arthritis) and require euthanasia. This should be decided on a case by case basis. Due to the nature of the infection, treatment of chronically ill animals is often unrewarding. Even drugs that are labeled (DRAXXIN[®] [*tulathromycin*] Injectable Solution) for *M. bovis* will have limited efficacy in animals with advanced clinical disease because too much tissue damage has occurred. The antibiotic, no matter how good it is, cannot penetrate and restore organs that have been affected by severe chronic disease. Therefore, in a feedlot where you know that mycoplasmosis is active, it's a good idea to use antibiotics early, perhaps even prophylactically, to prevent the establishment of significant disease. Antibiotics are expensive and their use needs to be assessed in each situation, but use in the early stages of disease is critical to their efficacy. It is also important to use antibiotics for the prescribed amount of time (consult your veterinarian) as premature discontinuation of therapy can lead to relapses.

Prevention

Several vaccines are available, Pulmo-Guard[™]MpB, Mycomune[®] Mycoplasma Bovis bacterin, and Myco-Bac[™] B, and should be used with the advice of your veterinarian. In some situations they can be highly effective. For instance, in a herd with a known incidence of the infection, routine vaccination of healthy and replacement animals is probably a good idea to create some immunity. Vaccination of sick animals is not a good use of time and money, as it will have little effect on established infections. A certain amount of herd immunity will develop in some animals that are exposed to the bacteria, but this will depend upon the immune system of the individual animal and the dose of bacteria to which they were exposed. A combination of herd immunity and vaccination is probably the best way to protect animals from clinical disease. Remember, vaccination may not always prevent infection, but it should help reduce clinical disease. Finally, in the event of an outbreak, it will probably be necessary to use a combination of animal management, vaccination, and treatment to eliminate the problem.

Conclusion

Mycoplasmosis is serious a condition affecting cattle in a variety of settings, including the feedlot. Due to the various types of disease conditions it can cause, eradication of the disease from a facility can be difficult. ◆