



John's Watch

A monthly bulletin for livestock producers

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Preventing John's Disease on the Farm

Producers attending the World Dairy Expo in Madison gather a great deal of new information and ideas from fellow dairy producers and industry representatives. For one Wisconsin producer, the take home message last year was: If you are not testing and managing for John's disease you better get started.

George Polzin, dairy producer from Cadott, Wis, markets Registered Red and White Holstein cattle from his central Wisconsin farm. He hopes that testing and managing for John's disease will attract more buyers to his farm.

Selling breeding stock is an important part of my business, Polzin states. I think people are interested in buying cattle from a John's test-negative herd. There was a lot of talk among people at World Dairy Expo about John's disease and I think more people are getting serious about it.

Polzin worked with the research and management team of AntelBio to design and implement his John's management plan. He is in the process of completing his first round of whole-herd testing, which involves blood ELISA tests on all lactating cows and service-age bulls.

We have to know if we have a problem with John's and to what extent before we can put the best management plan in place, Polzin states. The biggest change we have made so far is discontinuing the practice of pooling colostrum.

Animals that test John's positive will be identified and isolated from the young stock. With three-fourths of his herd tested, Polzin has only found a couple test-positive animals. He plans to cull these animals at the end of their lactation.

I want to be proactive about this situation, Polzin states. I think it (John's disease) is a much bigger problem than producers realize. I have never had a cow show clinical signs of John's, yet testing is showing we do have some infected animals.

Polzin is part of a growing number of producers working with their veterinarians or management consultants to curb the onset of John's disease in their herds. The slow-growing nature of this disease makes John's a silent, costly disease affecting both dairy and beef cattle.

Prevention of the disease should be the first line of defense for all producers. The United States Animal Health Association recommends that replacement animals and new additions to the herd be obtained from John's free or John's test-negative herds. If testing records are not available, buyers should know the environment the cattle are raised in and check dam and offspring health records.

Transmission through fecal-oral route

Many states have adopted Johne's disease control programs, which enable producers to declare with certain degrees of confidence that their herds are free of Johne's disease. The level of confidence that a herd is Johne's-free increases with each successive negative, annual whole herd test. Most programs estimate that the confidence for Johne's-free exceeds 99 percent after four successive negative tests.

Understanding how Johne's disease is transmitted from one animal to the next is critical to developing a successful management plan on the farm. Research has found that calves under six months of age are the most susceptible animals and most infections are assumed to occur at this time.

Transmission of the infection occurs mainly through the fecal-oral route, but may also occur via colostrum, milk and through the placenta in utero. The National Health Monitoring System reported that the primary method of transmission of infection is through fecal contamination of the calf's environment, including contamination of milk and feed, resulting in oral ingestion of the agent by the calf. In addition, both clinically affected and normal appearing infected cows (subclinical) may shed *M. paratuberculosis* in their colostrum and milk, especially in later stages of infection.

Establishing a Johne's management and prevention plan will also be effective in preventing other viral, bacterial and parasitic diseases affecting cattle. Pathogens including calf scour microbes like BVD, Corona and Rota viruses, E. Coli and Salmonella bacteria are also transmitted from infected animals excreting or shedding the pathogen in their feces.

Producers interested in determining whether or not they have Johne's disease in their herd have several testing options. A random sampling of the herd, approximately 30 animals or a statistical subset of the herd, will return a yes or no answer. If all animals test negative, it is possible the herd does not have Johne's disease. However, if any animal tests positive, the random sampling method will not tell the producer how widespread the disease is in the herd (herd prevalence).

The first step in a Johne's control program is to estimate the prevalence of *M. paratuberculosis* infection on the farm by conducting a whole-herd screening test on all animals three years of age or older, says Donald Sockett, DVM, MS, Ph.D., Wisconsin Veterinary Diagnostic Laboratory- Madison. I recommend the herd be tested with a whole-herd ELISA test followed by a fecal culture test within a 12 month period.

NJWG Best Management Practices

The National Johne's Working Group (NJWG) has specific management areas that should be addressed to reduce infections in a herd. It is important to note that the management practices used to control Johne's are not complicated and generally are simple and inexpensive to implement on the farm; yet, they can significantly reduce the spread of the disease. The NJWG recommendations include: manure management, colostrum and milk management, and identification and removal of infected animals and their offspring.

Manure Management

All manure is suspect! Management practices should be put in place to prevent the exposure of calves to manure from adult animals. Calves should be born in a clean environment and separated from their mothers within six hours. Cleaning maternity pens after each use also helps prevent contamination.

Research from Michigan State University found that cleaning maternity pens after each use was associated with a three-fold reduction in the odds of a herd being positive for *M. paratuberculosis* infection.

In the research conducted by Johnson-Ifeorunlu and Kaneene, several calf-rearing practices were evaluated, yet only cleaning and moving calf hutches or pens was significantly associated with herd *M. paratuberculosis* infection status. The researchers state that this age group is most susceptible to infection from *M. paratuberculosis* and, thus a key to preventing infection of these animals is minimizing contact with contaminated manure, feed and equipment.

Preventing manure contamination of feed and water supplies is also critical to preventing the spread of Johne's disease. Separate equipment should be used for manure handling and moving feed. The use of feed bunks also keeps the feed relatively free from manure contamination.

Jim Slavik, a dairy producer in central Michigan, began an aggressive Johne's management program on his farm five years ago. With help from his veterinarian, Slavik implemented several management practices to reduce the spread of Johne's on his farm. In addition to using separate equipment for handling feed and manure, he is also careful not to contaminate growing feed.

We never spread manure on our hay crops, Slavik states. We prevent the manure from coming in contact with feed in all areas of our farm.

Pastures also need careful management. For maximum risk reduction, the NJWG recommends tilling infected pastures or grazing them with non-replacement cattle until environmental conditions cause destruction of the Johne's bacteria. This can take up to a year.

Research at Michigan State University found that the incorporation of lime to pasture can serve as a protective measure against the spread of Johne's disease. In the study, a 10-fold reduction in the odds of herd infection was realized through the application of lime to pasture areas.

According to the researchers, the mechanism behind the proposed protective efforts of lime are not known; however, it is believed that the elevation in environmental pH caused by the lime, reduces the ability of *M. paratuberculosis* to compete with other microorganisms for available iron.

Milk and Colostrum

M. paratuberculosis is transmitted through colostrum and milk, making newborn calves especially susceptible to contracting the disease if their mother is shedding the organism. Using colostrum from only test-negative cows will help prevent this transmission. Colostrum should not be pooled among cows. Removing newborn calves from their mothers as soon as possible prevents natural nursing and the potential ingestion of contaminated manure or milk.

Identification and Removal of Infected Animals

Because of the potential for disease transmission through milk, waste milk should not be fed to calves. All calves should be fed a high-quality milk replacer until weaning. The use of milk replacer instead of waste milk can also prevent the spread of other contagious organisms. In addition to Johne's disease, salmonella, bovine viral diarrhea (BVD), bovine leukosis, mycoplasma and infectious mastitis can be spread through colostrum or nonpasteurized waste milk.

Cary Dairy in southern Michigan began their management program by testing all cows. Having test results on every lactating animal allows the herd manager, Gary Bivens, to establish an effective colostrum feeding program for calves. The newborn calves are fed colostrum from test-negative cows and then switched to milk replacer.

Bivens has also stopped feeding the waste feed from the cows to the young stock to prevent the spread of Johne's. Instead, the feed is given to older animals who are less likely to contract the infection.

Producers who develop management strategies that include routine testing programs have a means of evaluating the effectiveness of their programs. Choosing the testing plan to best fit your farm's goals requires an understanding of the tests currently available. Producers should consult with their veterinarians for decisions on how best to use and interpret Johne's diagnostic tests. (*See Johne's Watch, Testing Options and Diagnosis of Johne's Disease, Vol. 1, Issue 2.*)

Once all the animals are tested, decisions can be made on how to handle any infected animals. Producers can choose to identify and manage the infected animals or to cull the animals. Management decisions regarding the handling of infected animals will be based on the herd manager's goals and the prevalence rate of the herd.

In some cases, producers may opt to use management changes only without testing to control Johne's disease. In these cases the producers need to recognize that they may not know the full extent of the herd's infection.

The NJWG stresses that the management practices recommended to control Johne's should be implemented on all farms to prevent new infections and the transmission of disease.

Producers should work with their veterinarians to design a management program suitable for their farm. Producers may also contact AntelBio at 1.800.631.3510 to establish testing and management programs to work in tandem with their veterinarian's program.

The next edition of *Johne's Watch* will discuss the economic impact of Johne's disease on farms.

References

Prevention and Control of Johne's Disease in Dairy Cattle, National Johne's Working Group Subcommittee on Education.

Management-related risk factors for *M. paratuberculosis* infection in Michigan, Johnson-Ifeorlundu and Kaneene, *Preventive Veterinary Medicine*, August 1998.

Johne's disease on U.S. Dairy Operations, USDA 1997