

Johne's in beef cattle

Though Johne's disease doesn't seem to be as big of a problem in beef cattle as dairy cattle, it's still an important disease to prevent and control.

By **Geni Wren**

Ask dairy veterinarians if they deal with Johne's disease in client herds, and they will probably say yes. Ask beef cattle veterinarians and the answer in most cases will be no, but that doesn't mean Johne's isn't a problem for the beef industry.

The Beef '97 Study conducted by the USDA's National Animal Health Monitoring System (NAHMS) showed that 92.2% of beef producers were either unaware of Johne's disease or recognized the name but knew little else about it, regardless of the size of operation or region of the country. The study also showed that 7.9% of 380 herds tested had animals positive for Johne's using the ELISA test (see "study results" sidebar).

"When we designed the Beef '97 study and looked at critical information gaps for the beef industry, the prevalence of Johne's disease and what sort of factors might be related to the presence or absence of Johne's on beef opera-



tions became an important area," says Dave Dargatz, DVM, PhD, USDA-APHIS-VS, Fort Collins, Colo. "Because of previous work with the Dairy '96 study, we had some information on the economic cost of Johne's in dairy herds, so we also wanted to look at that on the beef side if we could, which proved to be much more difficult."

Economic problems

Though it may not be easy (some might say nearly impossible) to quantify the economic impact of Johne's in a beef herd, the bigger picture of the beef industry is where economics plays a role.

"Johne's disease has a direct impact on people selling genetics," says Don Hansen, DVM, Oregon State University. "I think it's a disease that should not be sold and I don't think anyone will disagree. It's definitely an issue for seed-stock and purebred producers. If you have it and you are selling it, someone will buy a heifer or bull and keep them long enough for it to break with the disease."

Another issue, says Dargatz, is trade. "More and more countries are undertaking Johne's disease control programs. I think as we look down the road we can't help but think there is a potential that this could become an important

Johne's information

There are many places to go for Johne's information:

- Your state's Johne's disease committee (if formed)
- *Paratuberculosis* (Johne's disease), Veterinary Clinics of North America — *Food Animal Practice*, July 1996.
- Johne's information center on the Web: www.vetmed.wisc.edu/pbs/johnes
- National Johne's Working Group, Education Subcommittee Chair, Dr. Don Hansen, Oregon State University
- USAHA (Johne's Committee and National Johne's Working Group) www.usaha.org/njwg
- USDA:APHIS:VS, Centers for Epidemiology and Animal Health on the World Wide Web at www.aphis.usda.gov/vs/ceah
- National Cattlemen's Beef Association



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trade issue with countries in Europe, Australia and others who have taken on the control of Johne's disease in their cattle populations."

And though the scientific jury is still out on the relationship between Johne's and Crohn's disease in humans, it's still an issue. "The potential for public safety may be a concern, though we don't know yet know if it is a public health issue," adds Hansen.

It can be managed in beef

"The beef industry has an opportunity to deal with Johne's disease when it apparently occurs at a fairly low prevalence," says Dargatz. "That doesn't mean it's an easy task. Anyone who has dealt with Johne's recognizes it's a very difficult disease to deal with."

But there's a danger in looking at those low prevalence numbers and thinking the disease is not an issue. "The beef industry is taking Johne's disease very seriously," says Dargatz. "There are a lot of reasons to be motivated to do something about this disease, and the industry is looking at this as an opportunity to take hold of the issue when it's perhaps at a more manageable level."

Johne's is transmitted through the fecal-oral route, as well as in milk, and whether it's a beef or dairy herd, that's where management needs

Put calving cows in a clean environment whenever possible to reduce the chance of transmission to the calf through infected manure.

What the Johne's study found

The Johne's component of the NAHMS Beef '97 study analyzed blood samples from 10,372 cows in 380 herds from 21 states. Of these samples, 40 (0.4%) were positive for antibodies to the organism that causes Johne's disease. The 40 positive animals were from 30 (7.9) of the tested herds. Very few registered operations were tested, making it impossible to say if there was a higher prevalence in these compared to commercial herds.

Dargatz says that though these percentages are low, the sampling protocol was designed to identify herds with at least 10% of the animals infected. It's possible that the within-herd prevalence could have been lower than 10% in some beef herds that were less intensively managed, and the study likely failed to identify these herds. The estimated herd prevalence of 7.9% should be considered a conservative estimate.

This study looked at Johne's across the industry in general, but future studies may attempt to evaluate the purebred segment of the population more closely if that becomes a priority. Given the low level of sampling in purebred operations in this study, there is not enough information to say whether this group is at lower or higher risk of being positive for Johne's.

"The good news is that Johne's appears to be present at a relatively low prevalence, but the bad news is we are limited in analysis we can do with the study design that we used since there were so few positive herds to look at," says Dargatz.

to focus. "It's hard but not complex," says Hansen. "We cannot protect the newborn calf if the dam is positive and shedding the organism in the milk. We're not going to tell beef producers to take calves away from their mothers like we recommend in the dairy industry. However,



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Don Hansen, DVM, says managing against Johne's disease will also manage against other fecal-oral transmitted diseases like calf scours.



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Johne's is a disease of particular importance to purebred and registered herds of all breeds.



we can institute management that takes new cow-calf pairs and puts them in a clean environment to minimize spread. Also, we want to encourage producers to not feed their cattle on the ground, but to put up bunks or racks to minimize the risk, particularly to younger stock.” (See management sidebar)

Dargatz says because beef operations are managed on a much less intensive basis as opposed to dairy operations, there is probably less opportunity for transmission. “The question is, how can we capitalize on the differences between beef and dairy management as we begin to try to control the disease for the beef client?”

Not only will putting in place manure management practices help to control the spread of Johne's, but it can also benefit your clients’

Management of Johne's in beef herds

The following are management techniques for the prevention or control of Johne's disease in beef herds, prepared by Don Hansen, DVM and Christine Rossiter, VMD, of the AABP Food Safety Committee and the National Johne's Working Group.

I Critical management points for prevention of Johne's disease:

■ A. Prevent infections by closing the herd to animals with an unknown Johne's infection status.

1. *Purchase from a test-negative herd.*
 - ▶ The owner has individual cow/calf records.
 - ▶ The owner uses the critical management points against Johne's disease.
2. *Pretest mature cow and bull additions.*
 - ▶ Recommended only when animals are acquired from an outside source of unknown infection status.
 - ▶ Test them two or three times at six to twelve month intervals, depending on the level of assurance desired.
 - ▶ Tests will not detect Johne's in early stages of the disease.

■ B. Secure replacements, recipients and additions from herds that are at low risk for Johne's disease.

1. *Obtain from a herd with negative Johne's history.*
 - ▶ Owner and veterinarian can document Johne's disease monitoring and the herd has had no cases for past five years.
2. *Acquire from a herd with low Johne's incidence.*

- ▶ Animals have tested positive for Johne's disease but herd history and test results indicate a low incidence.
- 3. *Purchase from a herd that tested negative on a sub-sample of the herd.*
 - ▶ Confidence in actual Johne's disease prevalence will depend on sub-sample size. See the testing protocol for the National Johne's Herd Status Program for examples.
- 4. *Pre- and post-test adult animal additions.*
 - ▶ Keep them isolated until cleared by tests.
 - ▶ Test them two to three times at six to twelve month intervals for increased confidence in their negative status.

Control

Additional steps are required to control infection. The critical management points in beef herds are aimed at protecting young stock from infection and reducing the pathogen load in the environment to reduce risk of transmission to young cattle. Identification and removal of infected animals may be more important in the beef herd because separation of young calves from adults is not practical.

Capitalize on the decision to manage against Johne's disease by addressing other health and performance issues on the ranch or farm that involve the same management areas and can be targeted as additional client goals. Examples include reducing risk for other pathogens, improved calving management, improved heifer development, reducing feed waste and improving pastures.

II Critical management points for control of Johne's disease:

■ A. Reduce infections by manure management (all manure is suspect).

1. *Reduce exposure to *M. paratuberculosis* for newborns.*
 - ▶ Avoid a manure build up in pastures and corrals where late gestation cows are kept.
 - ▶ Clean calving area, keep cow density low, avoid overcrowding.
 - ▶ Move new cow/calf pairs to clean pasture as soon as bonding occurs.
 - ▶ Avoid keeping high risk or sick cows in common calving area.
2. *Provide clean feed for all cattle.*
 - ▶ Avoid manure contamination of feed by using feed bunks and/or hay racks.

other disease control programs. "If you manage against Johne's disease, you are also managing against all of the other fecal-oral transmitted diseases like calf scours and diarrhea-causing agents like *Salmonella* and *Cryptosporidia*," says Hansen. "There are good 'ride-along' benefits than can also improve management for heifer development and nutritional schemes in beef herds."

"We shouldn't be paralyzed because of the lack of complete and specific information for the beef cattle enterprises," Dargatz says. "We shouldn't sit back and say because we don't have all the answers for beef, we can't make any headway. I think there are a lot of people who would suggest that we can, in fact, make a lot of headway with Johne's disease by borrowing information from the dairy industry." ■



The less intensive management of beef herds probably keeps the prevalence of Johne's down, but it's still an important disease to prevent and control.

- ▶ Do not allow young stock and infected adults to use the same feed, pasture, or water sources.

- ▶ Consider forage crops that had fresh manure applied as fertilizer during the current growing season as a feed risk to young stock.

- ▶ Use separate equipment to handle manure and feed.

3. *Provide clean water for young stock and mature animals.*

- ▶ Supply clean water, not contaminated by potentially infected animals.

- ▶ Use troughs or panels to restrict access to streams and ponds.

- ▶ Divert manure runoff from water sources.

4. *Keep manure from mature animals separate from young stock.*

- ▶ Raise weaned young stock in separate facilities, or pastures not recently used by adult cattle.

- ▶ Prevent transporting bacteria to young stock by people, runoff and equipment.

- ▶ Transport cattle in clean trucks.

■ **B. Reduce infections by colostrum management.**

1. *Feed "low risk" colostrum.*

- ▶ When certain calves need a colostrum supplement, collect from healthy cows, negative on recent tests.

- ▶ Thoroughly clean the udder and

teats before collection to avoid fecal contamination.

- ▶ Consider using quality commercial colostrum supplement products.

■ **C. Reduce infections by management of infected animals (critical for beef herds).**

1. *Identify and remove clinical and late-stage animals immediately.*

- ▶ Watch for and confirm diagnosis of Johne's-suspect animals early.

- ▶ Cull test-positives immediately, or segregate them from calving area and young stock.

- ▶ Consider culling or segregating all offspring of these infected dams.

2. *Test to manage subclinical animals and define herd status.*

- ▶ Develop and carry out appropriate test strategy to identify subclinically infected animals.

- ▶ Cull, segregate, or manage them to reduce pathogen exposure to others.

- ▶ Have a plan for high and low risk animals, based on test results, that enhances control efforts.

- ▶ Strongly consider keeping replacement animals only from test-negative cows.

- ▶ Schedule herd-testing to provide optimal information for herd management, i.e., testing at herd pregnancy examination or herd vaccination time.

3. *Be aware of disease risks when adding animals.*

- ▶ Know the risk in the source-herd for infections one may bring in, i.e., Johne's, *Salmonella*, BVD or *Cryptosporidia*, etc.

- ▶ Consider pretesting, including the source herd, where appropriate.

- ▶ Isolate, observe and test new arrivals before adding to herd, then integrate them into the routine test program

■ **D. Work with clients and key employees to develop a plan**

- ▶ Use "Johne's Disease Manual for Veterinarians," *Bovine Practitioner*, June 1999.

- ▶ Take the time to work with your clients to develop a prevention or control plan that fits their operation.

- ▶ Assess herd history and estimate the level and potential impact of Johne's disease.

- ▶ Do a risk assessment of areas where infection can spread on the farm or ranch.

- ▶ Help clients define specific control measures to meet their objectives and situation.

- ▶ Make a team involving employees and other advisors, from the start, who will be responsible for carrying out the plan long term.

- ▶ Review plans and records regularly. Identify and address problems as they arise.