

Where we stand in the Johne's war

FOR this update, we put the following questions to Michael Collins, professor of microbiology at the University of Wisconsin School of Veterinary Medicine and president of the International Association for Paratuberculosis.

— The editors

Is the Johne's situation getting better?

It is getting worse. Consider the USDA-National Animal Health Monitoring System surveys. The 1996 survey reported that 22 percent of U.S. dairy herds had Johne's. The 2002 survey found that 80 percent were infected. This was based on fecal culture positives.



Collins

This growth in infection is logical in that virtually chronic, incurable infectious diseases will spread (get worse) unless or until something substantial is done to stop the spread. Cattle are being bought and sold daily without regard for their Johne's status.

What current developments will help?

In research, we're getting a better handle on how Johne's tests compare. There are three USDA-licensed ELISAs for use on serum (blood). Two of these (CSL/Biocor and IDEXX) have high specificity, meaning that you can trust a positive test to be positive. The third, Synbiotics, has lower specificity but better sensitivity. It could be a good screening test, but you would have to do follow-up tests on positives.

The milk test for Johne's (Antel Biosystems) detects almost as many infected cows as the blood tests do and has relatively high specificity. Milk testing provides an easier, lower-cost way to detect the most infectious cows. Milk ELISA results can be delivered back to the farm as part of DHI reports, saving a lot of blood sampling costs.

Generally, the higher the numbers for any test, the greater the likelihood the cow has Johne's. Conversely, the more *M. paratuberculosis* bacteria per gram of cow manure, the greater the likelihood the cow will test positive with any of the antibody detection tests on either blood or milk.

Regarding field studies, the 10 herd owners in the Wisconsin demonstration project (funded by USDA and Wisconsin Milk Marketing Board) are glad to be in the program. Most had infection rates of 25 to 50 percent of their herd (based on fecal culture). Now, they are seeing very few cows with clinical Johne's. The first heifers born under the new program will enter study milking herds this year.

Here's the "new" program on these farms:

- Remove newborns from dams within one hour.
- Feed 4 quarts of colostrum from a single, Johne's negative cow within six hours.
- Feed only milk replacer or pasteurized milk.
- Keep feed and water for heifers free of manure from cows.
- Test every cow in last third of lactation.
- Put special ear tags or leg bands on positive cows.
- Cull cows with strong positive results.
- Calve positive cows in a separate area.
- Never use colostrum from positive cows.

The University of Wisconsin School of Veterinary Medicine (with funding from the USDA through the state ag department) created an online certification program for veterinarians. It provides six hours of continuing education credit. That is followed by an on-farm test to verify that they can spot the greatest risks of Johne's transmission and can design effective and affordable programs to correct these problems.

The website is: <http://vetmedce.org/>. The key person behind the program is Jeannette McDonald, DVM. Other states have adopted this same program (Nebraska, Washington, and Texas, so far).

Are we doing the right things on our farms?

Nearly all people are feeding milk replacer, and some are switching to pasteurized waste milk. The biggest problem still is calving time. Too many calves are being born in gutters, on grates, in free stall alleys, and in dirty maternity pens.

Of greatest concern to me is that cows that do not have Johne's are being calved in the same place as the cows that do. I often ask dairy producers whether they would like their next child born in the tuberculosis or leprosy ward of a hospital. If not, then why have calves born in a place where cows with Johne's have been?

What about the usefulness of our tests?

About 30 percent of all fecal culture-positive cows will test positive to a blood or milk test. Some experts think this percentage is too low. However, blood and milk tests detect 50 percent of the moderate shedders and 80 percent of the heavy shedders.

So, for a third of the cost of fecal culture, you can detect the cows most likely to spread the infection. Also, you can get the test results in less than a week compared to three to four months.

In my opinion, blood and milk ELISAs are a good value. I may change my mind if milk prices get real high or if Johne's is confirmed to have human health implications. When milk prices are higher, people can afford to spend more on testing. If Johne's is recognized as a public health concern, producers will have to invest in tests with higher sensitivity (and higher cost) than our current blood and milk tests.

Pooling of manure samples from several cows for testing is a good way to screen herds. It is most effective to verify that herds are not infected. With herds known to be infected, you might as well sample individual cows initially. Otherwise, you have to go back and sample all 5 or 10 cows that contributed to a positive pooled sample.

Might we see more interest in vaccination?

I only hope a better vaccine becomes available. The one that's available is far from effective.

What about the Johne's-Crohn's link?

Concern remains high that the cause of Johne's is the same as the cause of Crohn's disease. In October, a team of physicians from Wisconsin published a study on pediatric Crohn's disease. Over a two-year period (2000-2001), they found 129 cases of Crohn's disease in kids under 18. This equated to a rate of 4.56 per 100,000 kids. While pediatric gastroenterologists used to see only a

few cases per year, they now see three to four cases each week. While the researchers did not mention a possible Johne's link, the study pointed to some environmental factor as the trigger for Crohn's. In my opinion, *M. paratuberculosis*, the Johne's organism, represents a likely candidate.

Many have advocated a national indemnity program. Are our tests accurate enough?

I believe we have tests that are accurate enough. However, indemnities may not be needed. With the right tests and test interpretations, we can identify cows that are not going to survive or produce well on the next lactation. Producers will want to cull these cows even without indemnities. Unfortunately, some of these cows that are in good body condition and two to three months from calving are "recycled" — sold to other unsuspecting dairy herd owners.

It is in the best interest of everyone in our industry to permanently label all cows certain to have Johne's disease before they leave the farm. Unless or until we stop recycling these cows into other herds, we will not stop the spread of this infection.

In my opinion, every cow with a strong positive blood test or positive culture or PCR manure



THERE'S STILL MUCH ROOM FOR IMPROVEMENT in where cows calve. Use of contaminated calving areas likely is the weakest link in Johne's control on most farms.

test should be branded, tagged, or ear punched (J-punch is used in Wisconsin). Every potential buyer needs to know that the animal has Johne's disease and should not be bought. Far too often, producers cull cows they know to have Johne's and are paid salvage value, say \$450. Then, someone sells that same cow to an unsuspecting dairy herd owner for \$1,450. The person conducting this transaction picks up a quick \$1,000 and spreads Johne's to another herd. **This must stop.**

In a well-designed program, dairy producers will not suffer financially. They will continue to get salvage value for Johne's culls. The only people who would raise objections to labeling cows for slaughter are those now financially benefitting from selling sick cows to dairymen. 