



## **New York State Cattle Health Assurance Program**

### **Johne's disease in Cattle - Article 3**

*This is the third article in a series presenting current information regarding Johne's disease in cattle. It is directed toward helping veterinarians and their clients prevent or control this disease and was adapted by permission from the original 1999-2000 series presented by the AABP Food Safety Committee. Content was edited and reviewed by the National Johne's Working Group and endorsed by the USAHA.*

### **Critical Management Points for Prevention and Control of Johne's Disease in Beef Cattle**

Prepared and edited by Don Hansen and Christine Rossiter  
of the AABP Food Safety Committee and the National Johne's Working Group

#### **Premise for critical management points**

1. Management points directed at prevention or control of Johne's disease will also reduce the risk for other important cattle pathogens, such as rota and corona viruses, *E. coli*, *Salmonella sp.*, coccidia and Cryptosporidia. They will also help improve animal performance.

2. Johne's disease is caused by the acid-fast bacteria, *Mycobacterium avium subspecies paratuberculosis (Map)*, which infects cells in the intestinal track. The infection causes diarrhea, wasting and death. Signs of the disease occur most commonly during the end stages of infection when the pathogen is also disseminated to other organs.

3. Not all cows advance to clinical disease. What proportion does and why they do it is not always known.

4. The infection is chronic and mostly subclinical in nature. Thus, Johne's should be regarded as a herd-wide problem, not just a matter of individual cows that exhibit end-stage clinical signs.

5. An infected cow may shed the pathogen in her feces for months to years before she develops clinical signs. She may shed  $10^6$  to  $10^8$  mycobacteria per gram of feces; thus severely contaminating her immediate environment. In the final stage, 30 to 30,000 mycobacteria per ounce may be

shed in colostrum and milk. The bacteria can also spread to infect a fetus *in utero*.

6. Johne's disease can be prevented, controlled or even eliminated from infected herds by applying critical management points that are based on the epidemiology and pathogenesis of the disease.

7. Prevention or control of Johne's takes commitment and time. Half-hearted attempts to prevent or control the disease generally fail. Prevention is always cheaper than control. Clinical signs may not be noticed for years after infection enters a herd and then may take five or more years to control.

#### **Prevention**

The NAHMS Beef '97 survey showed that 80 to 90 percent of U.S. beef herds are at low risk for Johne's disease infection. Therefore, prevention should be the goal of every beef cattle operator. Low-risk and infection-free replacement animals are needed. Veterinarians should encourage their cow/calf producer clients to evaluate their herd's Johne's infection status. If these herds are Johne's-free, help them create plans to prevent entrance of infection.

Preventing the introduction of Johne's disease is straight forward: close the herd to infected replacements, recipients, bulls or herd additions and guard against entry of

manure contaminated equipment, feed, water and contaminated colostrum or milk from other herds.

Current diagnostic tests for Johne's are adequate tools to determine infection status of the client's herd or potential replacement animals from tested herds. However, detection accuracy at early stages of infection, even in mature animals, is low. Negative test results from immature animals (less than 24 months of age) for Johne's generally have limited value.

The Johne's disease-status of a source-herd provides critical information to estimate infection in an individual animal. Confidence that an animal or herd is not infected requires repeated tests with negative results.

National USAHA approved guidelines exist to establish a low-risk herd status using cost effective testing.

## **I. Critical Management Points for Prevention of Johne's Disease**

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

1. *Purchase from a test-negative herd.*
  - Owner has individual cow/calf records.
  - Owner practices critical management points against Johne's disease.
2. *Pre-test mature cow and bull additions.*
  - Only necessary when the animals are acquired from outside sources with unknown Johne's infection status.
  - Test each animal two or three times at six to twelve month intervals, depending on the level of assurance desired.

### **B. Secure replacements, recipients and additions from herds that are low-risk for Johne's disease.**

1. *Acquire from a herd with negative Johne's history.*
  - Owner and veterinarian monitoring documents that the herd did not have any Johne's cases for the 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 tests negative on a sub-sample of the herd.*
  - Negative test results from 30 randomly chosen cows, less than four years old, likely indicate that less than 10 percent of the cows are infected.
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 for control of infection. The critical management points in beef herds are aimed to protect young stock from infection and to reduce the pathogen load in the environment for reduced transmission risk.

Identification and removal of infected animals may be more important in a beef herd than a dairy herd because separation of young calves from adults is impracticable.

Control is based on improving management and offers the opportunity to capitalize on the decision to manage against Johne's disease. Many health and performance issues involve the same management areas and can be targeted as additional client goals. Examples include reduced risk for other pathogens, improved calving management, improved heifer development, reduced feed waste and improved pastures.

## II. Critical Management Points for Control of Johne's Disease

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

1. *Reduce newborn exposure to Map.*
  - Avoid manure build-up in pastures and corrals where late gestation cows are kept.
  - Clean the calving area, keep cow density low and 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 areas.
2. *Provide clean feed for young stock and mature animals.*
  - Avoid manure contamination of feed by using feed bunks and/or hay racks.
  - 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 for young stock.
  - Use separate equipment to handle manure and feed.
3. *Provide clean water for young stock and mature animals.*
  - Supply clean water that is 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 transportation of bacteria to young stock by people, runoff or 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 it from healthy cows that were 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.
  - Cull test-positives immediately or segregate them from the calving area and young stock.
  - Consider culling or segregating all offspring from infected dams.
2. *Test to manage subclinical animals and define herd status.*
  - Carry out test strategies to identify subclinically infected animals.
  - Cull, segregate or manage subclinical animals to reduce pathogen exposure to others.
  - Develop plans for high and low risk animals, based on test results, to enhance control efforts.
  - Consider keeping replacement animals only from test-negative cows.
  - Schedule herd testing to provide optimal information for management, i.e., testing at herd pregnancy examination or herd vaccination time.
3. *Be aware of disease risks when adding animals.*
  - Know the risk for infections that may be acquired from the source-herd, i.e., Johne's, Salmonella, BVD or Cryptosporidia or Neospora.
  - Consider pre-testing, including the source herd, where appropriate.

- Isolate, observe and test new arrivals before adding to the herd. Also, create a routine test program

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

- Discuss participating in the New York Cattle Health Assurance Program. This program provides assistance to develop a Johne's plan that meets the clients' goals and other priority issues.
- Consider purchasing the "Johne's Disease Manual for Veterinarians," Bovine Practitioner, May 1999, as a guide to Johne's planning.
- Develop a prevention or control plan with your clients.

- Assess herd history and estimate the level and potential impact of Johne's disease.
- Conduct 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.
- Involve employees and other advisors from the start as a team responsible for carrying out the plan over the long-term.
- Review plans and records regularly. Identify and address problems as they arise.
- Modify the plan as needed. Keep it a dynamic guide.