Colorado Voluntary Bovine Johne's Disease Control Program













Beef Brochure

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INTRODUCTION



Johne's Disease (JD), pronounced "yo-knees", is quickly coming to the forefront as an important disease of cattle with good reason. It is a chronic, untreatable, disease with a long incubation period. Clinically affected cows produce less milk resulting in lighter calves at weaning. The shortened life span of cows results in higher replacement costs and the premature loss of valuable genetics in

purebred and seedstock herds. Clinical cows culled from the herd have lighter body weights, decreasing their sale value. Purebred breeders can suffer the loss of marketability of their cattle when their herd becomes infected with Johne's.

The National Animal Health Monitoring System Beef '97 study tested 10,372 cows in 380 herds from 21 states. The study estimated that 7.9% of the herds were infected. This is probably a conservative estimate since the study was designed to detect herds that had at least 10% of their animals infected. Herds with a lower infection rate were probably not detected.

In order to determine if your operation is losing money from JD, you first have to know if it is present in your herd. If you have culled animals because of chronic diarrhea and weight loss, your herd is at a greater risk of having JD. Herd testing is the easiest part of the JD control process, but testing and culling is not the best method of disease prevention and control. Education

and management are integral to a successful program.

The Colorado Voluntary Bovine Johne's Disease Control Program (CVBJDCP) was developed to ensure education about JD and identify management procedures to reduce the likelihood of transmission to other animals before testing begins.



Figure 3

Beef cattle are not the only animals at risk. Dairy cattle, sheep, goats, llamas and other animals are also at risk. Although many animals are at risk, this program was designed specifically for dairy and beef cattle.



The Main objective of the Colorado Johne's Disease Control Program is to educate livestock producers about JD and give them the tools to prevent, control and even eliminate the disease from a livestock operation.

Participation in the Program is completely voluntary and the confidentiality of test results will be maintained within the limits of Colorado law. The veterinarian can submit samples under his/her name to maintain herd anonymity.





FREQUENTLY ASKED QUESTIONS

What is Johne's Disease?

Johne's Disease, also referred to as paratuberculosis or Para TB, is a chronic, incurable disease that affects many domestic ruminants as well as other species.

What causes Johne's Disease?

JD is caused by a bacteria, *Mycobacterium avium* subspecies *paratuberculosis*, sometimes called MAP. The bacteria can be found

in tissues such as lymph nodes and uterus or body secretions such as milk and feces. It is most commonly found in the small intestine. The bacterium slowly grows in the small intestines of the animal and eventually leads to intestinal thickening and the inability of the animal to efficiently absorb nutrients. Vast numbers of the organism can be shed in the feces



Photo from Johnes.org

How does an animal become infected with Johne's?

Ingestion of MAP via manure contaminated udders, milk, water or feed is the most common method of infection and usually occurs in animals within the first few months of life. Infected animals shed large numbers of bacteria in their feces, which leads to contamination of feed and water sources. Infected animals can also shed the bacteria in their colostrum and milk. Fetuses can also be infected prior to calving.







FREQUENTLY ASKED QUESTIONS

What are the clinical signs of Johne's?

The clinical signs of JD are unresponsive diarrhea and weight loss while still maintaining a normal appetite. Clinical signs usually aren't apparent until after two years of age, but may not appear for many years depending on the extent of the infection and the stress level of the animal. Infected cows can be slower to breed back, produce lighter calves and may be culled long before they show typical clinical signs.

What can I do to prevent and control JD?

Controlling and preventing JD requires education, refinement of management procedures, and herd testing/culling of infected animals. Each herd should develop an individualized plan depending on their goals. The more aggressive the plan, the more likely a producer is to reduce or eliminate the disease in a shorter time period. The first step in preventing and controlling the disease is to participate in the Colorado Voluntary Bovine Johne's Disease Control Program. Part of the management portion of the program involves a JD risk assessment for your farm or ranch. This allows your veterinarian to make specific recommendations to prevent and control the spread of JD within your herd.



COLORADO VOLUNTARY BOVINE JOHNE'S DISEASE CONTROL PROGRAM

What is the Colorado Voluntary Bovine Johne's Disease Control Program?

The Colorado Johne's Advisory Committee was formed in 1998 to address the problem of JD in the Colorado livestock industry. Members of the livestock community consulted with university and state officials for assistance in developing the program. After three years of development, the committee finalized plans for the Voluntary Bovine Johne's Disease Control Program in Colorado. The program was modeled after the recommendations of the National Johne's Working Group, which is comprised of Johne's Disease experts from around the country. *The unique aspect of the program is that it is completely voluntary, a producer can complete as much or as little of the Program as they desire.*

What are the advantages of the program?

As a producer, the Program will educate you about JD and give management recommendations for your herd. There are also economic benefits to having a Johne's test negative herd, decreasing the prevalence of the disease in your herd, and preventing the introduction of the disease into your herd. Management practices encouraged by the Program are also affective in controlling other fecal orally transmitted diseases like Salmonellosis, Colibacillosis, Coccidiosis, Cryptosporidiosis, intestinal nematodes, Rota and Corona virus infections.

What are the disadvantages if I choose not to participate?

The only disadvantage is that you are not taking a proactive approach to the disease in your herd. Many herds don't have JD, but can acquire it through the purchase of herd bulls and replacement heifers. You can decrease the chance of purchasing Johne's infected cattle by becoming more informed and implementing management procedures to reduce the risk.

Who oversees the Program?

An appointed state animal health official will be the Designated Johne's Coordinator (DJC). The person is responsible for the training of Certified Johne's Veterinarians (CJV) who will work directly with your herd. The DJC and CJV have additional training in JD epidemiology and development of herd management plans.

What does the Program entail?

The program consists of three components: **Education**, **Management** and **Testing.** Some Colorado cow/calf producers have already started the education portion of the Program through seminars and reading articles on JD. **Education** about the disease allows producers to understand the reasoning behind detailed management recommendations given in the second component. The **Management** component uses specific farm or ranch characteristics in making control and prevention recommendations. Some producers will want to become involved in the third aspect of the Program which is **Testing** cows for JD. Testing is not required to participate in the Program, and producers can still test animals "outside" of the Program while involved in the other two aspects.

Again, the program is voluntary and producers can participate in as much of the Program as they desire.

1. EDUCATION

The first component and foundation of the Program involves education about JD. This serves as the entry level for producer participation into the Program. Education can take place through group workshops or through one-on-one sessions with a Certified Johne's Veterinarian.





Descriptive guidelines for scoring risk factors for beef herds

A. Calving Area Since calves are the most susceptible to infection, the score values are higher for risk factors in this area. Risk factors for the maternity or calving area should be assessed for the potential of a new born to ingest manure or *Mycobacterium avium* ss *paratuberculosis* (MAP) from mature cattle. Considerations include ground and pen surfaces, contaminated udders and teats, suckling colostrum from an infected cow or manure contamination on calf's body surfaces.

Risk Factors	Scoring guidelines
Is the area used for more than one calving cow at a time?	Lowest risk = single pen use (0-1). Moderate risk = general calving area (corral or pasture) with moderate cow concentration were calves are born (4-6). Highest risk = Heavy cow concentration where calves are born (8-10).
Does manure build-up in the calving area posing a risk for calf ingestion?	Lowest risk = area always clean and dry (0-1). Moderate risk = area has fair amount of manure visible but more manure-free than manure contaminated (4-6). Highest risk = area is more manure covered than manure-free to extensive manure contamination (8-10)
Are calving cow's udders soiled with manure?	Lowest risk = 90% of udders are clean and dry (0-1). Moderate risk = moderate amount of manure on udders of 20% - 40% of cows (4-6). Highest risk = udders are manure covered on a majority of cows (8-10).
Are high risk/JD clinical and suspects in calving area?	Lowest risk = almost never (0-1). Moderate risk = low risk suspects in calving area (4-6). Highest risk = high risk / JD clinicals are in calving area (8-10).

B. Nursing calf group Risk factors for this group should be assessed for the potential of a calf to ingest manure or MAP from mature cattle. Considerations include ground and pen surfaces and potential contaminated water or feed. Consider all sources for potential manure contamination including, accidental contamination of any water, feed or pen surfaces from mature cattle or people.

Risk Factor	Scoring guidelines
Are cow/calf pairs pasture with JD	Lowest risk = never or rarely (0-1). Moderate risk = occasionally.
clinical or suspect cattle?	Highest risk = frequently (8-10).
Does manure build-up in the	Lowest risk = area always clean and dry (0-1). Moderate risk = area has little
pasture posing a risk for calf	manure visible to area about 60% manure-free (4-6). Highest risk = area is
ingestion?	< 50% manure free to extensive manure contamination (8-10).
Can calf's water be contaminated	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from a few
with cow/bull manure any time?	sources (4-6). Highest risk = frequently from many sources (8-10).
Can calf's feed be contaminated	Lowest risk = never to rarely (0-1). Moderate risk = occasionally (4-6).
with cow / bull manure any time?	Highest risk = frequently or always (8-10).
Are sick calves kept with or near	Lowest risk = almost never (0-1). Moderate risk = sick calf pen adjacent to sick
sick cows?	cow pen (4-6). Highest risk = sick calves are penned with sick cows (8-10).

C. Weaned calves group The age of this group may extend to 16 months. The score values are less than younger calves but higher than bred heifers, yearling bulls or cows. Risk factors for this group should also be assessed for the potential of a calf to ingest manure or MAP from mature cattle. Considerations include ground and pen surfaces, water or feed. Consider all sources.

Risk Factor	Scoring guidelines
Do weaned calves have contact with	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from
mature cattle or their manure?	a few sources (3-5). Highest risk = frequently from many sources (6-7).
Is it possible for manure from mature	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from
cattle to contaminate the feed?	a few sources (3-5). Highest risk = frequently from many sources (6-7).
Is it possible for manure from mature	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from
cattle to contaminate water sources?	a few sources (3-5). Highest risk = frequently from many sources (6-7).
Do heifers or young bulls share	Lowest risk = never to rarely (0-1). Moderate risk = occasionally (3-5).
pasture with mature cattle?	Highest risk = frequently or always (6-7).
Is manure spread on pasture then	Lowest risk = never to rarely (0-1). Moderate risk = occasionally (3-5).
used by heifers or young bulls?	Highest risk = frequently or always (6-7).

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D. Bred heifer and yearling bull group This group of cattle is usually over 12 months of age and is believed to be substantially less susceptible to Johne's than newborn calves. The score values are less than younger calves but slightly higher than cows. Risk factors for this group should also be assessed for the potential of a yearling animal to ingest manure or MAP from mature cattle. Thoughts include ground and pen surfaces, water or feed. Other sources for potential contamination include, manure runoff from cow herd, sharing pasture or water with mature cattle, accidental contamination of any feed, water or pen surfaces from mature cattle, equipment, traffic splatter or people.

Risk Factor	Scoring guidelines
Do heifers or yearling bull have contact with mature cattle or their manure?	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from a few sources (3). Highest risk = frequently from many sources (5).
Is it possible for manure from mature cattle to contaminate the feed?	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from a few sources (3). Highest risk = frequently from many sources (5).
Is it possible for manure from mature cattle to contaminate the water used by bred heifers or yearling bulls?	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from a few sources (3). Highest risk = frequently from many sources (5).
Do bred heifers or yearling bulls share pasture with mature cattle any time?	Lowest risk = never to rarely (0-1). Moderate risk = be occasionally 3). Highest risk = frequently or always (5).
Is manure spread on forage then fed to bred heifers or yearling bulls?	Lowest risk = never to rarely (0-1). Moderate risk = occasionally (3). Highest risk = frequently or always (5).

E. Cow group Even though cattle over 24 months of age are believed to be less susceptible to JD, infected cattle may shed MAP and other pathogens in their feces and add significantly to the overall pathogen load in their environment. One of the primary objectives of a management plan is to reduce the pathogen load in the environment. Risk factors for this group should be assessed for the potential of a cow to ingest significant amounts of MAP from the environment over time. Considerations include water or feed. Consider all sources for potential contamination including accidental contamination of any feed, water from other mature cattle, equipment, traffic splatter or people.

Risk Factor	Scoring guidelines
Is it possible for feed to be	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from a few
contaminated with manure?	sources (2-3). Highest risk = frequently or always from many sources (4).
Is manure contamination of the	Lowest risk = never to rarely (0-1). Moderate risk = occasionally from a few
water possible?	sources (2-3). Highest risk = frequently or always from many sources (4).
Do cows have access to	Lowest risk = never to rarely (0-1). Moderate risk = occasionally (2-3).
accumulated or stored manure?	Highest risk = frequently or always (4).
Is manure spread on forage and	Lowest risk = never to rarely (0-1). Moderate risk = occasionally (2-3).
grazed or fed the same season?	Highest risk = frequently or always (4).

F. Additions and replacement group Animals acquired from outside sources may pose a significant risk for many diseases including Johne's. Preventing entrance of pathogens into a herd is a primary biosecurity objective of the management plan. The maximum score for this risk is high because of its potential to introduce a new or maintain an existing pathogen load in the herd. The assessment is based on the source and number of animals that enter the herd or location. The assessment for this operation policy is found on page 6 of the 'beef' handbook.

Producers who have completed the Education component may wish to participate in the Management component. Performing a JD Risk Assessment and designing an overall Herd Management Plan are two important aspects of the Management component. A risk assessment identifies management factors associated with an increased risk of spreading the disease. The CJV will help producers develop a Herd Management Plan based on the Risk Assessment. In addition to the herd specific portion of the management plan, minimum biosecurity measures are part of an overall plan. Producers can incorporate these measures into the management practices and overall herd plan. **The Management Plan is the most important aspect of Johne's Disease control and prevention.**

2. HERD TESTING AND CLASSIFICATION

The third element of the Program is designed to identify herds that are test-positive and test-negative, based on the results of animal testing. Herds will continue to undergo Risk Assessments and finetuning of the Management Plans during testing. After initial testing, herds will be assigned to by the DJC to either the test-positive or test-negative components depending on the presence or absence of test positive animals and the source of bulls and replacements females.

What if I don't want to test my herd?

The Program does not require testing to participate. The Program is structured so every cow/calf producer can participate without testing. The Education and Management components are important aspects that should involve all cow/calf producers. Testing of animals "outside" the Program, as a management tool, allows producers to continue to monitor and control the disease without being classified as a "High Risk" farm or ranch. Testing samples outside the Program may also be submitted under your veterinarians' name to protect herd identity.





What types of test can be used for Johne's testing?

The two main types of tests used are the ELISA blood test, which is a screening test, and the fecal culture, which is considered an official test. Animals that test positive with the ELISA should be confirmed positive with the fecal culture. Fecal culture positive animals are considered to be infected and should be managed to eliminate fecal exposure to other animals, or be culled. Federal regulations restrict interstate (between states) movement of fecal culture positive cattle except to slaughter.

What Animals should be tested for Johne's Disease?

Animals eligible for testing within the Program are cows greater than 3 years of age (2nd lactation or greater) and bulls over 2 years of age. A total of 30 animals are tested with the ELISA blood test on the initial herd screening. If your herd has less than 30 animals in these age ranges, you must include enough animals in their 1st lactation to satisfy the minimum of 30 test animals, or your complete herd. Samples must be submitted to an approved NVSL lab. Colorado State University's Diagnostic Laboratory and the Colorado Department of Agriculture's Rocky Mountain Regional Animal Health Laboratory are approved labs.

What happens if all animals test negative?

Test Negative herds can enter the Test Negative Herd or Herd Status Program if they obtain replacements from herds with the same or greater status. Annual testing moves these herds (assuming they maintain a test-negative herd) from a Status Level 1 to a Status Level 4. Status Level 4 herds have been tested four times in a minimum of three years without any positive animals. For specific testing requirements, please consult the Program Manual.

What happens if a number of animals test positive?

Herds with test-positive animals may elect to enter the Preventative Management Program or Test Positive Herd category. Based on the herd prevalence (the percentage of infected cattle), the herd is assigned a Test Positive Level of A through D. As newly adopted management changes lower the infection rate in a herd, subsequent testing will allow the herd to be placed at a lower prevalence level. When all cows test-negative, the herd can enter the Test Negative Herd or Herd Status level.

Can Johne's Disease be prevented with vaccinations?

Colorado does not allow the use of Johne's Vaccines. Studies indicate that the vaccines can prevent cattle from developing clinical signs of JD but may not prevent cattle from becoming infected and shedding the bacteria. JD vaccinations can also complicate TB test results. A few states allow JD vaccinations so Colorado producers may purchase vaccinated animals. Blood from vaccinated cattle may give unreliable JD ELISA test results. Therefore, vaccinated cattle should only be tested by an official organism detection test (fecal culture, biopsy, PCR).

How do I maintain or improve herd status?

Herd Status Levels must be renewed within 14 months of the original or last testing date. Producers may elect to remain at their current Herd Status Level by testing 30 randomly selected, 2nd lactation or greater cows. Or producers may elect to advance their herds by testing additional numbers of cows as outlined in the Program. Failure to do either will place herds back in the Management component.







RECOMMENDED MANAGEMENT PRACTICES FOR PREVENTING AND CONTROLLING JOHNE'S DISEASE

Prevention or control of Johne's Disease takes time and commitment. Once the bacterial pathogen is introduced into a herd, it can spread through the herd for several years before sick animals are noticed. A typical herd control program may take five years or longer. A shorter period is possible, but may be more expensive. It is always less expensive to prevent Johne's infection that to try to control it.

Most herd owners have unknowingly purchased JD through replacements or other herd additions. To reduce this possibility in your herd:

- Close the herd to animals with an unknown Johne's infection status.
- Secure replacements and additions from herds that are at low risk for JD.





THE FOLLOWING MANAGEMENT PRACTICES SHOULD BE USED TO IMPROVE HERD HEALTH AND SPECIFICALLY TO DECREASE SPREAD OF JOHNE'S DISEASE

Calving Area

Management Objective: Prevent calf exposure to manure from adults.

Ideally:

- For calving in corrals: Use area for calving only: keep corral clean and dry; only move cows into area when close up; clip and clean udders and teats before calving; use single animal pens to calve in; clean manure and bedding after each use; always use adequate bedding; remove cow and calf to clean pasture as soon as calf has nursed and can walk. Do not use pens and working facilities for sick cattle
- For calving in pastures: Use pastures as large as possible; keep cow density as low as possible; clip udders before calving; feed supplemental feed in bunks and off the ground; and move feeding sites frequently.



Pre-weaned Calves

Management Objective: Minimize contact with manure from adult cows and prevent contact with test-positive Johne's infected cows.

- Test all cows and remove test-positive cows from the herd.
- Keep cow density as low as possible.
- Feed supplemental feed in bunks and off the ground.
- Move feeding sites frequently.



- If feed rings are used, move frequently.
- Use fresh potable water in stock tanks that are fenced or designed to prevent cows from defecating in them.
- Buy dairy nurse cows from JD testnegative dairy herds.





POST-WEANED CALVES & BRED HEIFERS

Management Objectives: Prevent exposure to manure from JD infected animals and prevent fecal contamination of feed, water and pastures.

Ideally:

- Maintain heifers and young bulls separate from adult cows and bulls.
- Do not commingle heifers and young bulls with adult cows and bulls.
- Prevent contact with manure from adult cows and bulls.
- Do not use common feedbunks with adult cattle.
- Do not use common stock tanks with adult cattle.
- Prevent runoff and drainage from adult cattle areas into young stock areas.
- Prevent runoff and manure contamination of feed.
- Do not run heifers and young bulls on pastures used by cows and bulls.
- Do not apply manure on pastures to be grazed by or harvested and fed to young stock.

ADULT COWS AND BULLS

Management Objectives: Eliminate high risk and test-positive animals

Ideally:

- Segregate, test and cull animals with clinical signs of JD as soon as possible.
- Test all cows and bulls 2 years and older.
- Remove JD test-positive cows and bulls from herd. Cull these animals or maintain in separate herd and facility.



For more information on the Program, including a copy of the Colorado Voluntary Bovine Johne's Disease Control Program which contains the complete rules, please contact the:

> Colorado Department of Agriculture Division of Animal Industry 700 Kipling Street, Suite 4000 Lakewood, CO 80215-8000 Phone (303) 239-4161 Fax (303) 239-4164 Or Designated Johne's Coordinator Dr. Ron Ackerman (303) 882-2753

Website Resources

Colorado Division of Animal Industry http://www.ag.state.co.us/animals/animals.html

Integrated Livestock Management http://www.cvmbs.colostate.edu/ilm/ilmintro.html

Colorado Veterinary Medical Association http://www.colovma.com/

USDA, APHIS, NAHMS http://www.aphis.usda.gov/vs/ceah/cahm/

> Johne's Information Center http://www.johne's.org/

National Johne's Working Group http://www.usaha.org/njwg.html

USDA, APHIS Veterinary Services http://www.aphis.usda.gov/vs/nahps/johnes/

