



# Johne's Disease in Cattle



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Johne's (pronounced "Yo-nees") Disease is a chronic infection caused by the bacteria *Mycobacterium avium* subspecies *paratuberculosis* (MAP). Although this disease is more common in dairy cattle, it is also a problem in beef cattle.

## **Clinical Signs**

Animals are typically infected with MAP as calves, but do not show any clinical signs until they are 2 and 10 years. Clinical signs include gradual weight loss despite a normal appetite and diarrhea. The diarrhea may wax and wane at first. It is common for the diarrhea and weight loss to start after calving. Intermandibular edema ("bottle jaw") may be seen in the later stages of disease due to a loss of blood proteins.

## **Stages of Infection and Disease**

### *Stage I: "Silent" infection (calves, yearlings, and adult cattle)*

Most cattle with Johne's Disease are infected with MAP as young calves, typically less than one month of age. The organism grows slowly in the intestines over months to years. Animals in stage I show no clinical signs, and they are rarely detected with even the most sensitive tests. Stage I usually lasts at least 2 years and may last longer than 10 years.

### *Stage II: Inapparent Carrier Adults*

Animals in stage II still do not show any clinical signs, but they do shed the MAP organism in their manure and thus contaminate the environment and infect other animals. They may or may not be positive on Johne's Disease tests.

### *Stage III: Clinical Disease*

Animals in stage III show gradual weight loss and intermittent diarrhea, but they have a normal appetite. Stress of calving, increased milk production, and poor nutrition can precipitate the progression into clinical disease. Animals can revert back to stage II after the inciting stressor is removed.

### *Stage IV: Advanced Clinical Disease*

Animals are weak, emaciated, and usually have severe, watery diarrhea. Bottle jaw is commonly seen in stage IV. The progression from stage II to stage IV can occur over weeks to months. Animals in stage IV usually do not live very long.

## **Transmission and Sources of Infection**

Calves are most susceptible during their first few months of life. Older animals exposed to very high levels of MAP may also become infected, but this is less common.

### *Manure:*

The most common source of infection is manure. Most infections occur in the early neonatal period with a calf nursing a manure-contaminated teat.

### *Milk / colostrum:*

The likelihood of transmission in the milk/colostrum increases as a cow progresses into the later stages of the disease.

### *In utero:*

Approximately 20 - 25 % of calves born to cattle with Johne's Disease are infected in utero.

### *Environment:*

The MAP organism can survive in the environment for about a year. As a result, water and forages can both become contaminated and serve as sources of infection.

## **Diagnosis**

Once clinical signs have started diagnosis of Johne's Disease is relatively straight forward. But, animals in the subclinical stages can test negative, even if they are infected and incubating the disease. Therefore, a negative Johne's test, especially on a young, healthy animal, does not mean it will not eventually succumb to Johne's Disease. And for a herd with Johne's Disease, it means that one herd test cannot identify all infected animals.

## **Treatment and Vaccination**

No medical treatment exists for Johne's Disease. A killed vaccine for Johne's Disease is available in some states with prior approval by the State Veterinarian. The vaccine does reduce the incidence of disease and delays the onset of clinical signs, but it does not eliminate infection.

## **Prevention and Control**

Due to the lack of treatment and a vaccine of limited use, the most effective control of Johne's Disease is implementing appropriate testing and biosecurity protocols. Because the infection is usually acquired when cattle are young, and because of the limits of testing, a Johne's control program in a herd is a long term proposition. But because infected animals may have production losses and can be shedding MAP even if not showing clinical signs, it is a disease worth controlling. If not controlled, over time, infection levels increase along with economic losses. If you have or suspect you have Johne's Disease, your veterinarian can talk to you about a Johne's control program.

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