

# Questions and Answers about Johne's Disease in Cattle

## **Q. What is Johne's disease and what animals get Johne's disease?**

**A.** Johne's (pronounced "Yo-nees") disease is an infectious bacterial disease primarily affecting the intestinal tract. Johne's disease should be considered a herd problem as well as an individual animal problem.

Animals most commonly affected are cattle, sheep, and goats. Johne's disease has been reported in several species of wild ruminants, both captive and free-ranging. In addition, a few reports of isolated cases in nonruminants, including nonhuman primates, have occurred, but none of these species are believed to be sources for Johne's disease in cattle. Some recent reports claimed to have cultured the microbe from, or detected its genetic components in, humans. However, the significance of these findings in humans as they relate to any human disease has yet to be determined.

## **Q. What causes Johne's disease?**

**A.** Johne's disease is caused by a bacterium named *Mycobacterium paratuberculosis*. It is a distant relative of the bacterium *Mycobacterium bovis* that causes tuberculosis (TB) in humans and animals, but does not cause TB.

The bacteria grow and multiply inside the immune cells of an animal. When the microbe is excreted in the feces, it can contaminate the soil or water. Outside the animal, the organism does not multiply well, if at all, but it can survive over a year in the environment because of its resistance to heat, cold, and drying. Therefore, the primary source of infection is directly from infected animals.

## **Q. What are the signs of disease?**

**A.** Because of the slow, progressive nature of the infection, signs of Johne's disease may not be seen until years after initial infection. Cattle may be infected for years before they show any signs of disease. When they finally do occur, the signs of Johne's disease are long-lasting diarrhea and weight loss despite a good appetite. Affected cattle do not

generally have a fever. Some infected animals appear malnourished and often weak while others just have chronic diarrhea. The signs of this disease can easily be confused with several other diseases. In the infected cow or heifer, noticeable signs commonly start within a few weeks after a stressful event like calving.

## **Q. What causes the signs of disease?**

**A.** The bacteria are taken up by specialized cells in the small intestine called the ileum where nutrients are absorbed from the feed. As the body tries to rid itself of these bacteria, the immune response causes a thickening of the intestinal lining, preventing it from functioning normally. This leads to poor absorption of nutrients and eventual diarrhea. As a result, although animals may be feeling and eating well, they begin to lose weight gradually.

## **Q. How can I tell if my herd is infected?**

**A.** Some animals may be infected, appear normal, and be culled before they show any clinical signs. Some owners may never realize their herd is infected. One hint in these herds could be that herd production is going down or is not as high as it should be, especially in 3- to 6-year-old cows. In attempting to find the cause of low herd production, owners should test several ill-appearing animals for Johne's disease. In other herds, owners who may see one or more cows with diarrhea or weight loss should consider Johne's disease as a possible cause.

## **Q. How can some cattle be infected with Johne's disease, yet not show signs?**

**A.** Infectious diseases, including Johne's disease, typically pass through four stages. Stage I is the initial infection. The animal is infected, not showing signs of disease and may be shedding small numbers of microbes into the environment that are not detectable by diagnostic tests. In Stage II, the infection is progressing and the animal still does not show any clinical signs. Nevertheless, the organism is being excreted in very high numbers, probably enough to infect others nearby. Infection is detectable by fecal culture techniques but not often by blood tests. In Stage III, the animal is showing the early signs of disease and many types of diagnostic tests can detect the infection. Stage IV is the obvious clinical disease and readily recognized by the trained observer and detected by diagnostic tests. It may take 2-6 or more years for Johne's disease to progress through all of these stages.

In some herds with Johne's disease, animals in all four stages of disease exist. For each animal showing obvious signs of Johne's disease (Stage IV), 5 to 15 other animals at various stages of infection are not showing signs.

**Q. What are common sources of Johne's disease?**

**A.** The most common source of infection is feces or manure. While protected in fresh manure, the organism can remain alive in the environment for over a year, depending on conditions. Ingestion of manure containing the microbe is the most common way animals become infected.

Johne's disease typically enters a herd as an infected, but healthy-looking, animal in Stage I. As the disease progresses in that animal, the frequency and number of bacteria being excreted increase. Every day, billions of Johne's microbes may be excreted from an animal in Stage III or IV of the disease.

Another source of infection is milk from infected dams. The likelihood of Johne's bacteria being excreted in milk of infected females increases as the disease progresses. Studies suggest that 36 percent of Stage III and IV cows could have Johne's microbes in their colostrum. In beef herds, where calves remain with their mothers and nurse daily, the chance for transmission of the infection through colostrum and milk is high. These bacteria may be excreted directly through the mother's milk or it might be present on the outside the teats in contaminated feces.

Prenatal exposure may be a source of infection for calves. Becoming infected before birth is possible for a fetus, if its mother is in the late stages of disease. Studies have shown that, in disease Stages III and IV in the dam, 8 to 40 percent of fetuses were infected from their mothers while still in the womb. Risk for infection of the fetus is low from mothers in disease Stages I and II.

Pond water contaminated with infected feces is another potential source of infection. Other possible, but less likely infection sources, are pastures contaminated with infected feces.

**Q. Can humans get Johne's disease?**

**A.** So far, no epidemiological studies have been published that examine any connection between contact with animals with Johne's disease and humans who develop Crohn's Disease, a human illness that in some ways, resembles Johne's disease.

**Q. Where can I obtain more information on Johne's disease?**

**A.** For more information on Johne's disease, contact:  
Dr. Michael Carter  
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Center for Animal Health Programs  
4700 River Road  
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Phone: (301) 734-4194  
or visit the APHIS Web site at  
[www.aphis.usda.gov](http://www.aphis.usda.gov).

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