

# The University of Tennessee

College of Veterinary Medicine  
Food Animal Field Services

## ***Johne's Disease (Mycobacterium avium subspecies paratuberculosis)***

Johne's (yo-nees) Disease is a chronic disease of the digestive tract of ruminants (cattle, sheep, and goats) and camelids (alpacas and llamas). Johne's occurs most commonly in dairy cattle, but may occasionally be seen in beef cattle as well. The disease is caused by a bacteria (*Mycobacterium avium* subspecies *paratuberculosis* (MAP)) and may cause a variety of clinical signs ranging from severe diarrhea and weight loss to weight loss only depending of the species affected. Animals are most commonly infected with MAP during the first few days of life and do not show clinical signs until they are adults. In the case of cattle, animals will often be 3-5 years of age before showing signs.

### ***The 4 stages of Johne's Disease***

- Stage 1—cattle are infected but they are not shedding the bacteria or showing clinical signs and will be negative on all tests.
- Stage 2—cattle still do not have any clinical signs but are shedding the bacteria. These cattle may be positive on fecal cultures.
- Stage 3—cattle have intermittent clinical signs (so some diarrhea once in a while) and are shedding bacteria most of the time. These cattle will usually be positive on a fecal culture as well as a blood test (ELISA/AGID)
- Stage 4—cattle have consistent clinical signs (diarrhea, weight loss, and sometimes bottle jaw) and continuous shedding of the bacteria. These cattle will get extremely thin in spite of having a great appetite. These cattle are positive on all tests. The frightening thing about Johne's disease is that if one stage 4 cow is found on your property, then there may be up to 20 animals that are infected but not showing clinical signs (stage 1, 2, or 3).
- Small ruminants (sheep and goats) and camelids have the same 4 stages but often do not have diarrhea. Chronic weight loss with a good appetite is the most common clinical finding in these species.

***Where does the bacteria come from?*** The bacteria can live in the soil for several months. Infected cattle shed the bacteria in their manure, milk, and colostrum. Calves are infected in the first days of life when housed with adults that are shedding the bacteria in the environment or in their milk. The calves inadvertently ingest contaminated mud or manure and then "absorb" the bacteria into their small intestine similar to absorbing colostrum. The bacteria colonize in the small intestine slowly causing it to thicken over several years. Once the gut becomes so compromised, cattle can no longer absorb necessary nutrients and lose excessive amounts of proteins through diarrhea.

***What is the treatment for Johne's Disease?*** Unfortunately, there is no treatment. The disease will eventually kill these cows. Culling is the only other option. This bacteria has not been found to be directly associated with causing disease in humans. Therefore, these cows can be slaughtered and safely enter the food chain.

***How do we prevent the spread of Johne's Disease?*** Controlling the spread of Johne's can be accomplished through proper management and good hygiene. New arrivals coming onto the farm should be screened for disease and isolated from the main herd for a period of time (30 days if possible). Because Johne's Disease is a progressive disease, herds should be screened every year. Cattle that test positive may need to be culled at the end of their lactation. At the very least calves should not receive colostrum or milk from cattle that have tested positive. Calves should also be housed separately from cows.

Johne's Disease can cause devastating losses on any cattle, small ruminant, or camelid farm. Because the disease most commonly affects dairy cattle, the losses in milk production and reproductive losses can be astronomical. Contact your local veterinarian, the food animal clinicians at the University of Tennessee's College of Veterinary Medicine, or your Extension agent for more information regarding Johne's Disease and screening your herd.