



## Johne's Disease in Beef Cattle



Johne's Disease, caused by *Mycobacterium avium var paratuberculosis* (MAP), is a slowly-progressing but ultimately fatal disease of all cloven-hoofed animals. The bacteria are ingested early in life, absorbed through the ileum, and are phagocytized by macrophages. Here they can thrive and multiply without being exposed to antibodies, then spread to other cells, and cause chronic inflammation. This inflammation produces the intestinal thickening that leads to weight loss, severe diarrhea, and eventually death.

### Facts about MAP/Johne's Infection

- Ingestion of MAP shed in feces is the most common route of infection; also ingested via milk
- A MAP-infected cow with **no symptoms** can shed 200 million bacteria per day in feces
- Milking cows also shed millions of bacteria in colostrum and milk
- A **one-time dose of one million bacteria** is considered enough to infect a calf
- Most animals that become infected will do so by 6 months of age

### Economic Realities

- A MAP-infected cow can infect her own calf and any other calves around her
- A calf that ingests MAP will absorb some into the intestinal lining and shed the rest in it's feces ("pass-through"); the calf can be dispersing MAP even before becoming infected
- MAP-infected cows have lower feed efficiency, lower milk production, wean smaller calves, are less likely to breed back, and bring a lower slaughter value (which decreases cash flow)
- Clinical cows may get "tanked" at slaughter and owner will pay for disposal
- MAP can survive for long periods in the environment:  
18 months in water troughs; 1-5 years on permanent pasture; 9 months in freezing temperatures; 9-12 months in lagoons and manure pits
- The estimated prevalence of MAP infection in beef cows is 5-8% and 20% of herds have at least one Johne's-positive animal.
- Just because a herd has good genetics and a good reputation does not mean they don't have MAP!
- Targeted surveillance is the best way to monitor MAP in a herd—perform fecal cultures on cows > 2 years of age as they calve (if possible—most likely time to find infected cows since shedding is highest around calving) or at preg check time
- **Fecal culture has the highest sensitivity** (60% compared to 32-40% for other blood, milk, and direct fecal testing) **and is our best test at finding MAP-NEGATIVE animals**
- All available tests have good specificity (>95%), so **A POSITIVE IS REALLY A POSITIVE**

The connection between Johne's Disease in animals and Crohn's disease in people has not been established; however, MAP can be cultured from people with Crohn's, so a connection is still possible. Animal rights and anti-livestock groups use this potential to their advantage, and consumers **must** be able to feel that their food is safe. Control measures implemented now will go a long way toward reassuring the public that the Beef Industry is addressing this disease.

**Ignoring the problem can have devastating consequences!**

## **Measures that decrease risks for Johne's will decrease risks for other diarrhea diseases (E. coli, Salmonella, Rota, Corona, Coccidia)**

- 1. CREATE AND FOLLOW A GOOD VACCINE & DEWORMING PROGRAM THAT WORKS FOR YOUR CLIENT'S HERD**—healthy cows are more likely to calve easily and raise a healthy calf; sick cows are easier to identify; must fit with clients existing management plan to be implemented
- 2. PRACTICE AND BELIEVE IN BIOSECURITY—Don't be the source of infection**
  - Clean and disinfect boots, change coveralls/clothes before handling young stock
  - Soap and water (or hand cleaning gel) are your friends—hand washing goes a long way to decreasing disease spread
  - Clients are more likely to follow biosecurity procedures if they see the veterinarian doing so
- 3. HELP CLIENTS KEEP GOOD RECORDS—if a cow is diagnosed with Johne's, cull her calves from the herd; this isn't possible if her offspring can't be identified**
- 4. MAKE FEASIBLE MANAGEMENT CHANGES—assess the risks to each herd and decide what changes will and won't work for individual producers**
  - Contact Dr. Randy Wheeler, IDALS Voluntary Johne's Control Program 515-281-0866
  - The program provides a one-on-one consultation with the Iowa District Veterinarian to identify risks in a herd at no charge to the client—practitioner is welcome to contribute
  - Client may elect to participate in diagnostic testing to establish if MAP is in the herd and look for possible shedding animals
- 5. WATCH COWS AND BULLS FOR CLINICAL DISEASE. Cows are most likely to shed MAP when their immune system is stressed; this occurs during late pregnancy and just after calving; include bulls in all herd health programs**
  - Look for cows that are in poor condition around calving, especially if they stand out from other herdmates—if every animal is on the same vaccine, deworming, and nutrition program, that cow has no good reason to be thin
  - Calve in the “cleanest” pasture, use only for calving, and move pairs out ASAP
  - Calve heifers separate from cows—easier to intervene, less fecal contamination from cows to calves of first-calf heifers
  - Keeping frozen colostrum is a good idea; buying frozen colostrum from an un-tested cow or pool of cows **IS NOT!**
  - Do not keep sick cows in the calving pasture or around young stock
  - When feeding hay, rotate feeding locations so that manure does not build up in one area
  - Use a water trough whenever possible—avoids manure contamination
  - If manure is spread on pasture, consider waiting to graze until following season
  - Shorten the calving season—calves will be more uniform in age and immune status, less likely to have one-month-old calves with four-month-old calves
- 6. DON'T BUY THE PROBLEM—Ask for Johne's Herd Status and Test Results**
  - **Veterinarians can be a great resource for recommending low-risk herds;** you can advise which herds are doing a **good** job with herd health programs and disease testing without revealing anything about herds that are not
  - Purchase bulls and replacement heifers from known-status herds, ask for test results on the animal's dam or adult cows from the herd
  - Don't buy untested dairy nurse cows, don't buy dairy drop calves to graft on to cows
  - Asking herd health questions of sellers doesn't make a producer mistrusting, **IT MAKES HIM OR HER A SMART BUYER**
- 7. Use the most appropriate and accurate testing for the type of herd being tested**—commercial and seed stock herds will have different priorities and various levels of acceptable risk
  - Blood and milk ELISA testing can be used for screening but have low sensitivity
  - Fecal culture tests can detect infective animals shedding MAP—best available test