

Johne's Disease

What it is

Johne's Disease (JD) is a contagious, progressive bacterial infection that causes abnormal thickening of the lining of the intestine and restricts the absorption of nutrients in all ruminant animals including cattle, sheep, goats, bison, yaks and other wildlife ruminants like elk and deer. JD is caused by a bacterium called *Mycobacterium avium* subspecies *paratuberculosis* (MAP), a distant relative to bacteria that causes tuberculosis in cattle and humans. MAP has been investigated for its potential link to Crohn's Disease in humans, but currently there is no conclusive link. Therefore, MAP is not considered to be a public health concern, but rather an animal health and economic concern.

Animals usually become infected with MAP when they are young (e.g., calves younger than 6 months old). JD has a long incubation period (the time between infection and display of symptoms); therefore, no symptoms of disease are seen for years after infection and most infected adults never show symptoms. However, infected animals shed MAP in feces and expose uninfected animals to the organism. During this time, owners may sell, cull or slaughter inapparently infected animals. When animals do show symptoms of JD, they initially start off with loose manure that progresses to diarrhea and are in poorer body condition compared to their unaffected herd mates.



Figure 1. A beef cow with symptoms of Johne's Disease. Photo source: Canadian Cattlemen File.

Why you should be concerned

1. It is an animal health issue

Under circumstances of stress like late pregnancy, poor nutrition and/or severe parasitism, a higher percentage of infected animals may develop symptoms of disease. Once symptoms develop, affected animals are at risk of dying due to dehydration and malabsorption of nutrients, even when they have received appropriate water and feed.

There is no effective treatment for JD and while there is a vaccine in some countries, it is not approved for use in Canada because it is not considered effective and it interferes with [tuberculosis testing](#). Researchers in Canada continue to look for an effective [vaccine](#).

Some of the health implications of JD on livestock include:

- progressive loss of body condition
- progressive decreased milk production
- decreased weaning weights
- beef cows with JD have been shown to wean calves 50 pounds less than normal herd mates)

2. It is an economic issue

JD can also have a significant economic impact on producers and may lead to:

- increased and/or earlier culling of clinically affected animals
- a damaged reputation and a lower genetics supply for seedstock producers
- increased veterinary and testing costs for infected animals

3. The risk of JD is increasing

The risk of JD in beef and dairy herds is increasing due to:

- herd dispersals result in the purchase of animals from multiple sources with unknown JD status
- rapidly increasing herd sizes

Currently, researchers estimate that JD infects 5% of Canadian beef herds and 70% of Canadian dairy herds.

How JD spreads

MAP (the organism that causes JD) is primarily spread through the manure of infected animals. Most animals become infected by ingesting MAP bacteria from contaminated udders, feed, water troughs and pastures with infected manure. Calves, lambs, and kids are most susceptible to new MAP infection, but adults may also be susceptible if exposed to high levels of the bacteria. While MAP do not multiply in the environment, they can survive in manure, water, and pastures for more than a year.

MAP is spread through the colostrum and milk of infected cows.

Calves can get infected while in the uterus of a cow infected with JD. The risk of transmission to the unborn calf is greater if the cow is showing symptoms of JD than if she is not.

It was previously thought that minimal shedding occurred in young calves after infection, but new research has shown that some calves can shed MAP after infection ([peak shedding in experimentally inoculated calves occurs at two months post-inoculation](#)). This has important implications for calves in close contact with each other or group-housed calves, as this means JD control programs must take both calf-to-calf and cow-to-calf transmission into account.

Lastly, even though most infected animals do not show any symptoms (due to a long incubation period), they are still shedding MAP bacteria. Only a small percentage (1-5%) of infected animals in a herd will show symptoms of the disease. The rest of the infected animals will appear healthy. This is known as the “iceberg effect.”

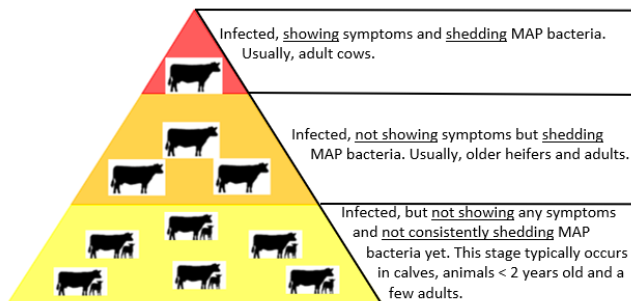


Figure 2. The iceberg effect.

What does JD look like

Once an animal does start to show signs of clinical disease, symptoms may include:

- Progressive weight loss (this may be the only sign in sheep and goats)
- Rough hair coat
- Drop in milk production
- Loose stool progressing to watery diarrhea
- Ventral edema (bottle jaw) due to low blood protein levels from malabsorption and loss through diarrhea
- Reduced appetite that may progress to anorexia in terminal stages

<https://www.alberta.ca/johnes-disease-notifiable>

©2023 Government of Alberta | November 23, 2023 | Ministry of Agriculture and Irrigation



Figure 3. A dairy cow with symptoms (bottle jaw) of Johne's Disease. Photo source: M.T. Collins, University of Wisconsin.

Preventing the spread of JD

1. Keeping the infection out of your herd by adopting prudent biosecurity measures is always more cost effective than trying to control the disease once it is present in the herd.
To prevent JD from entering your herd:
 - Purchase replacement animals only from test-negative herds or from herds with a proven record of JD control measures in place.
 - Only purchase commercial colostrum supplements from a company that uses production methods that destroy the MAP bacteria.
 - Do not use surplus milk from dairies to feed orphan calves. Use high-quality commercial calf replacers.
2. Newborn and young calves are the most susceptible to getting infected with MAP. **To prevent JD from spreading within your herd:**
 - Do not use maternity pens or calving pens to house or examine sick cows.
 - Have your veterinarian examine sick cows to diagnose JD based on:
 - Medical history, physical exam, testing via fecal and/or blood tests.
 - A post-mortem examination (characteristic changes in the intestinal wall include chronic, segmental thickening of the ileum, cecum and proximal colon).
 - Avoid exposing calves to manure from adult cows as much as reasonably possible.
 - Ensure there is adequately clean bedding in maternity and calving pens to reduce contact with manure.
 - Bed generously when calving in confined or muddy conditions.
 - Calve first-calf heifers separate from mature cows.
 - Avoid overcrowding in pre-calving and post-calving pens.
 - Reduce manure build up in pens and pastures.

- As soon as beef cows and calves have bonded, move the cow-calf pairs to clean pens with lots of good, clean bedding.
- Once calves are weaned, do not put them on pastures used by cows.
- Avoid overgrazing to reduce the risk that cattle will graze close to the ground and consume soil and manure.
- Do not spread manure on land used for grazing (especially for young stock).
- Use separate equipment for handling manure and feed.
- Manage water sources, grazing, manure and runoff to prevent the spread of JD into and out of your herd.
- Clean washable tools, troughs and feed pans thoroughly; disinfectants will not work as expected when organic matter (e.g., manure) is present. There are several disinfectants effective against MAP, and it is generally agreed that disinfectants that are labelled as *tuberculocidal* are effective. It is important to read labels and adhere to the manufacturer's directions, cautions and warnings. Consult with your veterinarian if you have questions.

3. To reduce the spread of JD to other farms

- Remove cows diagnosed by testing and/or suspected of JD from the herd and send for slaughter; they should not be sold to another producer or sent to a livestock auction. Cows showing severe symptoms of JD should be humanely euthanized on your farm and not transported to a processing facility.
- Replacement heifers born from cows suspected or known to have JD should be evaluated for risk of exposure. Consider testing and/or culling these heifers from the breeding herd and sending them for slaughter.

4. Establish a sound biosecurity program for your herd.

There are many great information sources on biosecurity programs, including your veterinarian, quality assurance programs, university extension websites and government websites. Go to [Biosecurity and Livestock](#) for an overview of information from the Government of Alberta.

Consult your veterinarian.

Many veterinary practitioners have received training in the standard risk assessment approach to JD prevention. Producers should work with these trained veterinarians to examine the herd's JD disease history, conduct a risk assessment of current management practices related to the spread of MAP, and develop a plan to implement the most appropriate measures to minimize JD in the herd.

Recommendations for herd testing and disease management will vary depending on how many animals are impacted, your herd size, whether you are seedstock producer and the relative intensity of herd management.

Contact your veterinarian for access to JD tests and an effective testing protocol for your operation.

Consult your industry.

Industry programs have relevant information for JD prevention and control. For example, best practices to address JD appear in the Animal Health, Animal Care, Biosecurity and Environmental Stewardship sections of the

[Verified Beef Production Plus](#) program website, as well as in the [Dairy Farmers of Canada Proaction](#) program. Bison producers can find information on the [Bison Producers of Alberta](#) webpage. Sheep and goat producers can reference the [Alberta Lamb Producers](#) website.

References:

1. [Beef Cattle Research Center](#)
2. [Dairy Farmers of Canada Proaction](#)
3. [John's Information Center – University of Wisconsin Madison – School of Veterinary Medicine](#)
4. [Verified Beef Production Plus](#)

What to do if you suspect JD in your livestock

Call your veterinarian within 24 hours because JD is a [provincially notifiable disease](#) under Alberta's [Animal Health Act](#).

Report all suspected or confirmed cases within 24 hours to the
**Office of the
Chief Provincial Veterinarian.**

Hours: 8:15 a.m. - 4:30 p.m.

Open Monday-Friday | Closed statutory holidays

Phone: 780-427-3448

Toll-free: dial 310-0000 before the phone number in Alberta

Fax: 780-415-0810