Johne’s disease (JD) in cattle

What is Johne’s disease (JD)?
Johne’s disease (JD) is an incurable infectious disease of ruminants including cattle, sheep, goats, alpaca and deer. It causes chronic diarrhoea and wasting, which eventually leads to death. JD is difficult to detect in the early stages of the disease and once introduced into a herd, it is difficult to eradicate.

What causes JD?
JD is caused by the bacteria *Mycobacterium paratuberculosis*. There are several strains of the bacteria, including sheep, cattle and bison strains. These strains are not specific to cattle and can infect sheep, goats, alpaca and deer as well.

The bacteria live and multiply in the lymph nodes and the small intestine of the animal and cause the intestinal wall to thicken. This reduces the animal’s ability to absorb food and water and results in continuing weight loss and death.

Signs of JD in cattle
JD has a long incubation period. Typically, cattle are most likely infected as calves and will not show any signs of illness until they are 3 to 4 years old. However, JD can cause reduced production levels even before the animal is noticeably unwell and the animal can be spreading the disease.

The visible signs of JD in cattle are:
- chronic diarrhoea that does not respond to treatment
- gradual weight loss despite normal or increased appetite with ample feed.

The signs of JD in infected animals are often triggered by calving, producing milk and a lack of feed or poor feed. Infected animals die within a few weeks to several months after the onset of signs.

How is JD spread?
JD can be spread among livestock through ingestion of the bacteria present in the colostrum, milk and faeces of infected animals or ingestion of soil, feed or water contaminated by the bacteria. The bacteria can survive in the soil for up to 12 months under cool, moist conditions.

How do we test for JD?
Several tests are available for JD, but all have limitations.

Tests include:
- blood tests – which look for an immune response to infection
- faecal tests – looking for bacteria in the faeces by culture or finding bacterial DNA
- postmortem tests – looking for bacteria in the gut and lymph nodes under a microscope, or finding bacteria by culture or bacterial DNA.

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Testing for JD is complex and takes time. Blood testing is not very specific and is likely to give some false positives (give a positive result even if there is no disease). It is a useful screening tool, but is not used for definitive diagnosis.

Testing faeces of live cattle is not very sensitive as it will only detect infection in animals already shedding bacteria. It is better used as a herd test rather than on individual animals. Young animals will test negative even if they are infected.

Finding JD in dead cattle involves looking at gut and lymph nodes under the microscope and finding the bacteria in faeces and tissue samples. This is the most sensitive method for finding disease in an individual animal, but will not pick up all infections especially in young animals. It takes more than three months to obtain results from culture of tissues or faeces.

Whenever a positive test is received, further testing by histology or culture is carried out to confirm the diagnosis.

For details of testing and sampling requirements, refer to Animal Health Australia’s (AHA) website.

**What is the economic impact of JD in cattle?**
A number of export markets place JD conditions on cattle and cattle products.

In dairy herds, JD causes economic losses through reduced milk production, reduced conception rates and restrictions on trading. In beef herds, the economic impact is still present but less significant, especially in well managed herds.

The level of infection in a herd increases over time and if the disease is left unmanaged, the economic effect of JD becomes increasingly significant.

**How is JD in cattle managed in Australia and WA?**
A new national framework for JD in cattle was implemented on 1 July 2016. Under the new framework, if JD is diagnosed, it must be reported to the state agricultural authorities but it is not regulated at a national level. Instead producers are encouraged to manage the risk of JD occurring on their property by using biosecurity tools such as the market assurance schemes Johne’s Beef Assurance Score (J-BAS) and Dairy Score and implementing farm biosecurity plans.

More information on the new approach to JD in cattle and biosecurity tools to manage the risk of JD can be found on the AHA website. The Department website also has a J-BAS factsheet and flowchart tailored for WA producers.

JD in cattle is not known to be present in WA, which provides some trading advantages. The WA cattle industry has decided to continue to regulate the management of JD in cattle and to maintain border controls for JD until a targeted surveillance program can be completed over the next 12-24 months. This decision was informed by an economic assessment of the potential costs of JD in cattle within WA should it enter and become established. The report is available on the Department website – search Economic impact evaluation of bovine Johne’s disease.

The conditions for cattle entering WA can be found on the Department website (agric.wa.gov.au) in the LB1 form - Health certificate for movement of stock to Western Australia.

**Note that JD in cattle is still a reportable disease in WA.** If JD is suspected or diagnosed in your cattle, you must report it to the Department.

**How can I keep my property free of JD?**
The highest risk of introducing JD is through introduction of infected animals. Avoid co-grazing beef cattle with sheep or dairy cattle, avoid grazing cattle on land previously grazed by sheep or dairy cattle and consider vaccinating sheep to minimise the JD risk from sheep. Also consider using embryos or semen to minimise the risk of introducing JD.

Before introducing stock, consider obtaining:
- a national cattle health declaration
- a Johne’s Beef Assurance Score (J-BAS) or Dairy Score.

Good biosecurity is fundamental to preventing the introduction of all pests and diseases, not just JD. This includes maintaining secure boundary fencing, preventing access to drainage channels and waterways, using troughs for watering cattle, and ensuring all visitors clean their boots, vehicles and equipment before entering the property. See AHA’s website for a JD biosecurity checklist.

**Where can I get more information?**
- Animal Health Australia website
- Your local Department vet – search ‘Livestock Biosecurity’ on agric.wa.gov.au or
- Dr Bruce Twentyman, Animal Disease Control
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