

FACT SHEET

APRIL 2016

JOHNE'S DISEASE – MANAGEMENT FOR NEW ZEALAND SHEEP

Johne's disease (also known as paratuberculosis or JD) is caused by an infection in the gut of sheep and other ruminants with the bacteria "*Mycobacterium avium paratuberculosis*" (Johne's bacteria or MAP). The infection causes gradual thickening and inflammation of the intestinal wall which eventually prevents the absorption of nutrients. Clinical Johne's disease is characterised by ill-thrift and progressive weight loss. No cure is available and the condition is eventually fatal.



KEY AREA MANAGEMENT

Johne's disease was first reported in sheep in New Zealand in the 1950's

Johne's disease is found in all farmed ruminants throughout New Zealand and is widespread in sheep flocks. While most flocks probably harbour some infected animals, the majority of animals infected with the bacteria do not progress through to the clinical stages of the disease. Clinical disease is responsible for significant animal health problems and production losses. In most flocks clinical disease is rare and only causes a small number of deaths per year. Keeping the flock in good condition and responding early if symptoms are seen is the best way to minimise new infection and avoid escalation of the disease.

Control priority: Reduce the number of clinical cases in a flock

Although we do not fully understand the science behind Johne's disease and why some animals develop clinical disease and others do not, it is clear that there are specific factors which increase the incidence of clinical disease. In sheep, stress brought about by pregnancy, shearing, weaning, drought and poor nutrition are thought to be triggers for clinical disease development.

The impact of Johne's disease can be minimised

Many husbandry, hygiene and management practices recommended for the control of Johne's disease in other ruminants are difficult to implement in New Zealand sheep production systems. Johne's disease in sheep is best controlled by reducing exposure to Johne's bacteria from infected animals or contaminated environments. The most practical means of achieving this is to vaccinate for Johne's disease.

CONTROLLING JOHNE'S DISEASE

It is not feasible to eradicate Johne's disease from a flock with today's technologies, but vaccination will significantly reduce the incidence of clinical disease. Flocks with high mortality from Johne's disease may also be experiencing deaths from other causes with similar signs such as parasitism, poor molars, enteric or respiratory disease. Get professional veterinary help to understand how Johne's is affecting your flock and how best to control it. Keep a long term focus as it can take several years to see the benefit of disease control for Johne's.

If you are seeking to control Johne's disease in dairy or beef cattle or deer you should consult specific guides prepared for these species^{1,2,3} as different strategies are recommended for other ruminants

While *Mycobacterium avium paratuberculosis* or MAP are the technically correct names for the bacteria, New Zealand farmers are more familiar with the term "Johne's" for the disease. For clarity we have used "Johne's bacterium" and "Johne's disease" in this fact sheet.

1. Dairy Cattle: <http://www.dairynz.co.nz/animal/health-conditions/johnes-disease/>
2. Deer: <http://www.johnes.org.nz/publications/>
3. Beef: <http://beeflambnz.com/Documents/Farm/johne-beef.pdf>

KEY JOHNE'S DISEASE FACTS

Johne's bacteria are mostly found in the faeces of infected and clinical animals but ewes in advanced stages of the disease can transmit Johne's disease to their lamb during pregnancy, via colostrum, milk and teats contaminated with faecal matter. The main sources of infection for a flock are infected ewes and the pastures they graze. Flocks with a Johne's disease mortality rate greater than 1-2% per annum are "high risk" flocks, which should consider vaccination as a control step.

Lambs

- Lambs are most susceptible to infection.
- Repeatedly ingesting high doses of Johne's bacteria will speed up disease progression and increase the severity of Johne's disease.
- While clinical disease is rare in young stock some younger animals can become transiently infected for a short period after contact with the Johnes bacteria (test positive and shedding the bacterium in their faeces). It is unlikely these animals will develop the disease in later life.

Adults (Ewes, Hoggets, Wethers and Rams)

- Clinical signs of Johne's disease usually appear in sheep older than 2 years of age.
- Adults may shed Johne's bacteria before clinical signs appear and will be a source of infection while they still look healthy.
- Stress often triggers clinical disease. Pregnancy, drought and poor nutrition are thought to increase the incidence of clinical disease.
- If a clinical case of Johne's disease occurs it is very likely that other animals in the flock will be infected even though they may appear healthy.
- In the advanced stages of disease animals may become "super-shedders", excreting huge numbers of bacteria (up to a million per gram) in their faeces.
- Johne's disease can decrease life expectancy and reduce productivity by about 25% over the lifetime of a ewe.

Vaccination

- A vaccine for Johne's disease in sheep is registered for use in New Zealand. Gudair^{®3} is a single shot for life vaccine administered at 4 weeks or at weaning after replacements have been selected.
- Vaccination reduces shedding and the number of deaths from Johne's disease but does not guarantee that sheep will not become infected. Vaccination will not eradicate the disease.
- As vaccination does not stop infection it is most effective if it is continued for a number of years, even after visible signs of the disease have been cleared from a flock.
- Modelling suggests vaccination may be advisable and cost effective on farms where deaths from Johne's disease are regularly observed.

3. Gudair® is registered by Zoetis, New Zealand. See www.gudair.co.nz for further details

Prevalence

- A high infection rate in flocks is believed to be related to prolonged exposure of lambs to infected dams and contaminated pastures.
- Johne's disease appears to be more prevalent in sheep in the North Island of New Zealand compared to the South.
- Fine wool breeds appear to be more prone to Johne's disease than other breeds.

Johne's bacteria

- Bacteria can survive for several months in effluent, water or on the pasture.
- Dark, damp and cool conditions promote survival of the bacteria in the environment.
- There are multiple strains of Johne's bacteria and it could be that some strains cause more severe disease than others.

Other ruminant species

- Deer, cattle, goat and other ruminants are all susceptible to Johne's disease.
- Close contact or co-grazing may lead to the disease being passed from one species to another.
- Other non-ruminant animals and wildlife may be infected with Johne's disease but how this might affect ruminants is unclear. They are unlikely to present a significant Johne's risk to farmed livestock.

JOHNE'S DISEASE MANAGEMENT FOR SHEEP

AIMS: To reduce exposure to contaminated faeces and reduce losses from clinical Johne's disease



Best Practice

- ✓ Vaccinate lambs at 4 weeks or at weaning in high risk flocks
- ✓ Blood test sheep showing signs of wasting and cull immediately if test positive
- ✓ Maintain ewes in optimum condition assessing stocking rates and levels of nutrition
- ✓ Where possible reduce the impact of stressful events (e.g. review timing of shearing and weaning)
- ✓ Implement a preventative flock health programme (parasites, facial eczema, foot-rot, flystrike, pneumonia)
- ✓ Isolate stock that are unwell



High risk behaviours to avoid

- ✗ Keeping sheep with Johne's disease: there is no cure
- ✗ Rearing lambs from Johne's diseased or test-positive ewes
- ✗ Exposing lambs to animals that are shedding or sick (including other species) and the pasture they graze on

MAKE A PLAN TO MANAGE JOHNE'S DISEASE

Johne's disease is best controlled by reducing exposure of lambs to the bacteria, either from infected animals or contaminated environments. It is good practice to work with a vet to investigate all cases of ill-thrift in the flock to ensure that diseases such as Johne's do not remain undetected and erode productivity, and to prevent a build-up of the disease on farm. Ensure your flock health program includes a plan to manage Johne's disease.

Recognise clinical signs of Johne's disease early

Clinical disease is the end stage of infection by Johne's bacteria and usually occurs in adults, around 3-4 years of age. Animals with clinical signs are highly likely to shed bacteria in their faeces. Signs include:

- Weight loss and poor body condition score despite a good appetite.
- Muscle wasting and emaciation.

- Affected animals may have soft faeces or diarrhoea and have a 'bottle jaw'.
- The intestines of diseased animals may be swollen and corrugated with enlarged intestinal lymph nodes

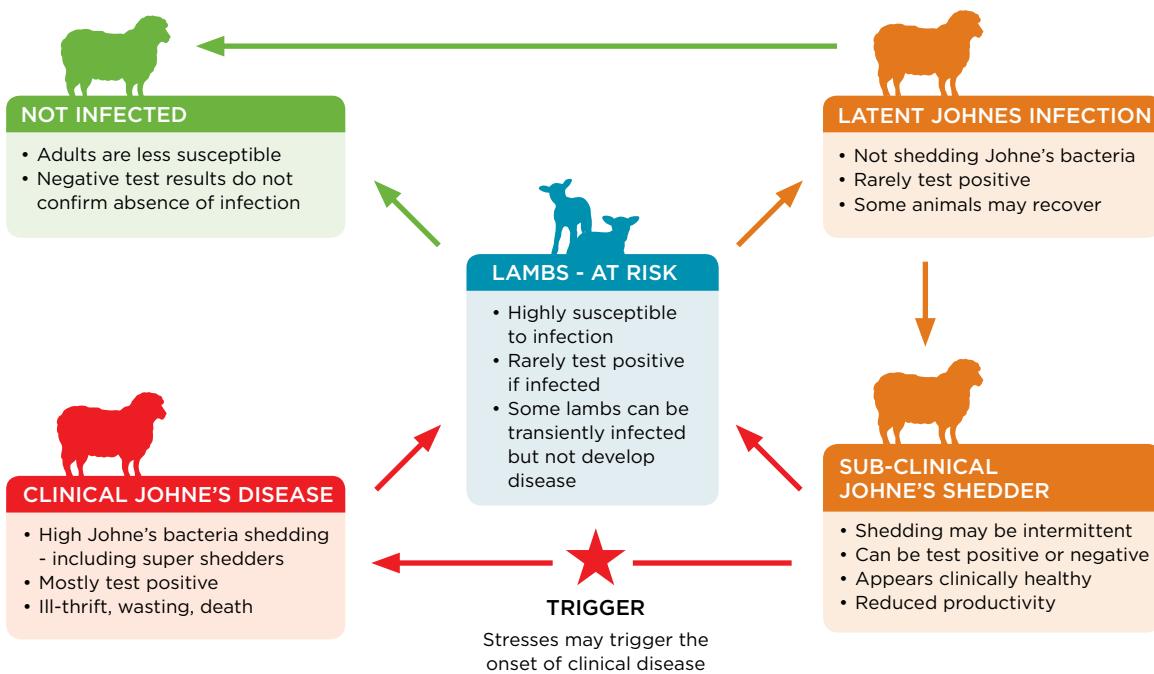
Testing to identify disease

Clinical Johne's disease can be confirmed in ewes with signs of wasting by a blood test (ELISA). The test is quite accurate where there is clinical disease, but is not very effective in the early stages of infection. Test results will be ranked into (weaker) positive versus high positive categories. Your vet and laboratory can help with test interpretation. All animals with a high positive ELISA should be culled as soon as possible to eliminate super and heavy shedders. If possible suspect animals should be separated from the flock and managed as highly contagious.

While tests are useful to confirm a diagnosis they are not always necessary. Work with your veterinarian to determine if testing is required.

! Sheep with clinical Johne's disease are sick and therefore not fit for human consumption!

THE JOHNE'S DISEASE LIFECYCLE IN A FLOCK



Beef + Lamb New Zealand would like to thank and acknowledge Johne's Disease Research Consortium for their assistance with this fact sheet.



For further information freephone Beef + Lamb New Zealand on 0800 BEEFLAMB (0800 233 352), email enquiries@beeflambnz.com or visit www.beeflambnz.com.

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