

tips & tools

ANIMAL HEALTH AND WELFARE



On-farm management of ovine Johne's disease

Ovine Johne's disease (OJD) is a chronic, wasting disease of sheep that can result in significant economic losses on infected farms due to sheep deaths, lost production and trading restrictions. OJD is caused by a bacteria that leads to thickening of the bowel wall and reduced absorption of nutrients from the intestine. This eventually leads to severe wasting and death, one or more years after the animal is first infected. The bacteria is passed in the dung of infected animals, contaminating pasture and water supplies and spreading infection to other susceptible sheep.

OJD occurs mainly in central and southern New South Wales, Victoria, Tasmania, Kangaroo Island in South Australia and southern Western Australia. OJD is not known to occur in Queensland and there is generally a low prevalence of infection in other areas.

OJD is difficult to eradicate from infected properties, therefore sheep producers must manage infected flocks and properties to reduce the overall on-farm impact of the disease. A vaccine is available and producers can implement pasture and grazing management strategies that reduce the opportunity for disease transmission.

Ideally, a combination of annual lamb vaccination and careful grazing management should be employed on OJD infected farms

Economic impact of OJD

Research in southern NSW has shown, on average, that over 6% of adult sheep in infected flocks die each year from OJD. This is more than twice the accepted annual death rate from all causes in Australian flocks. It is calculated that these losses will, on average, result in a 6.4% reduction in expected farm gross margin or an economic loss of over \$7.60 per dry sheep equivalent (DSE). Figures in 2002 only represent direct costs associated with the disease and actual losses are likely to be far greater. Additional losses are also incurred through reduced bodyweight and downgrading of infected sheep sold for slaughter. Some farms lose over 17% of their adult flock to OJD each year, highlighting the substantial losses that can occur if the disease is allowed to progress unchecked.

Key benefits

- Combine annual lamb vaccination and careful grazing management to reduce the level of OJD infection in your flock
- Prevent economic loss through adult sheep deaths and improve profitability on OJD infected farms

Vaccination against OJD

A vaccine against OJD called Gudair® is registered for use in Australia. This vaccine is a valuable management tool to aid in the control of the disease. The vaccine does not prevent infection entirely, however it does significantly reduce the number of sheep that die from OJD and, very importantly, decreases the amount of bacteria passed in the dung. This reduces environmental contamination and provides less opportunity for disease transmission.

Field trials have shown that vaccination of lambs can reduce OJD-related deaths by up to 90%. Vaccination of lambs also delays the onset of bacterial shedding in the dung by up to 12 months and reduces the overall volume of shedding by around 90%. Lower levels of bacteria on pasture should reduce the risk of disease transmission to subsequent lamb crops.

It is important to remember that vaccination is not 100% effective. Some vaccinated sheep may still develop 'sub-clinical' OJD infection and shed bacteria in their dung without showing obvious signs of illness. Some vaccinated sheep will eventually develop severe 'clinical' OJD and may shed huge quantities of bacteria on the pasture before they die. Any sheep showing signs of wasting should be immediately culled to reduce pasture contamination.

® Gudair Vaccine, Trademark of CZ Veterinaria SA: Distributed by Pfizer Animal Health

The benefits of vaccination are likely to become more evident following vaccination of a number of successive lamb crops, particularly once ewes vaccinated as lambs are themselves producing offspring.

Why vaccinate?

Vaccinated sheep may be used to:

- Reduce the prevalence of OJD on infected properties. Vaccination acts as a 'circuit-breaker' in the disease cycle, reducing the level of OJD bacteria shed in the manure of infected mobs, decreasing pasture contamination and the risk of disease transmission to younger animals.
- Produce 'low-risk' or low-contamination pastures to provide safer grazing for susceptible lambs and weaners.
- Provide a 'management barrier' around property perimeters to reduce the risk of disease spread to or from neighbouring properties.
- Provide low risk replacement stock for infected properties.

Using the vaccine

The Gudair® vaccine can be administered to sheep from four weeks of age. It is an inactivated (killed) vaccine so there is no risk that vaccination will introduce OJD into uninfected flocks. A single 1mL dose is given, most commonly at lamb marking. Booster doses are not required.

Injection site reactions are common with Gudair® and it is important to administer the dose under the skin high on the neck behind the ear. Animals should be adequately restrained during vaccination. Young lambs should be vaccinated in a lamb marking cradle. Weaners, hoggets and adult sheep should be packed tight in a race and have their heads held high to ensure the vaccine is delivered at the correct site. Vaccinated sheep must be identified with a NLIS (sheep) tag that contains the property identification code or number and the letter 'V'.

Injection-site reactions occur in about 50% of vaccinated sheep. In 25% of cases these lumps persist for up to 30 months after vaccination. Despite the high frequency of reactions, abattoir surveys suggest that these lesions result in minimal extra trimming at slaughter and carcass downgrading is unlikely. You should however avoid vaccinating sheep that are destined for slaughter as lambs.

Contact your local government or private veterinarian for further information on obtaining and using the vaccine as regulations related to its use may vary between states.

Precautions when vaccinating against OJD

Producers and veterinarians should be aware that accidental self-injection with the OJD vaccine, Gudair® can cause a severe and persistent reaction. Vaccinators should be trained in correct vaccination technique and safe handling of vaccinating equipment. For further information contact your animal health advisor or Pfizer Animal Health 1800 814 883.



Grazing management strategies

OJD is usually spread when susceptible young sheep graze pastures contaminated with the dung of infected animals. Lambs are susceptible to infection both before and after weaning. One of the major factors leading to high infection rates in flocks appears to be prolonged exposure of lambs to contaminated pastures.

Aim of grazing management

The primary aim of grazing management is to reduce the exposure of lambs to OJD bacteria both **before and after weaning**. This should reduce the flock infection rate and the number of sheep which die over subsequent years. Ideally grazing management should be combined with an OJD vaccination program.

It is difficult to avoid exposure of lambs to some level of OJD contamination before weaning if they are born into an infected flock. The main source of contamination will be infected ewes and the pastures they graze. Exposure can be reduced by lambing onto specially prepared 'low-contamination' pastures and by early weaning to separate lambs from infected ewes. It is also important to immediately cull any ewe showing signs of wasting, as these sheep may shed large numbers of OJD bacteria.



Photo courtesy of NSW Department of Primary Industries

It is easier to control contamination levels in weaning paddocks than lambing paddocks. Research suggests that OJD infection rates can be reduced if lambs are moved to safe pasture at weaning, particularly in flocks with a low level of infection where pre-weaning contamination has been limited. Some lambs infected prior to weaning have been shown to recover from the disease entirely while others enter a 'sub-clinical' state without outward signs of ill health. This may persist indefinitely if they are not exposed to high levels of infection after weaning. In heavily infected flocks multiple strategies may be needed to achieve adequate disease control, including the provision of low-risk pastures both before and after weaning.

Weaned lambs should remain on safe pastures for as long as possible. You should be aware that there may be an

increased risk of parasitism in weaners if the same pastures are used repeatedly, particularly if grazed by newly weaned lambs for more than six months each year. Consult your local veterinarian or animal health advisor for further information and advice.

How to prepare low-contamination pastures

Most OJD bacteria die within six weeks in the environment, particularly during the summer months. Some bacteria may survive for more than 12 months in shaded areas and water sources such as dams and troughs.

Paddocks with a low level of bacterial contamination can be prepared by removing all sheep that may be shedding OJD organisms from the paddock **for at least three months during the summer**. These pastures will not be totally free of OJD bacteria; however, contamination is likely to be at a level where the majority of lambs will not become infected. Some Merino sheep (about 3–6%) are extremely susceptible to the disease and may become infected even when pasture contamination levels are low. The time needed to prepare pastures in cooler months is uncertain so it is recommended that low-contamination pasture be prepared during the summer if possible.

You must also consider the parasite levels on pastures, particularly when preparing paddocks for weaners.

Paddocks with low worm and OJD bacteria contamination can be prepared by:

- grazing with adult cattle (not calves)
- grazing with dry adult sheep over two years of age that are OJD free
- grazing with young sheep (less than 12 months of age) that have been treated with controlled release anthelmintic capsules
- spelling the pasture entirely or using a crop rotation

If necessary, adult sheep vaccinated against OJD as lambs can be used to prepare pastures, however it is likely that some of these sheep will be shedding OJD organisms. Any sheep showing signs of wasting should be culled immediately to reduce pasture contamination.

Seasonal considerations

In winter rainfall areas, low-contamination paddocks are often needed for weaners in August or September. These paddocks should be prepared for six months before they are needed in order to minimise parasite egg and larvae levels.

In summer rainfall areas, low-contamination pastures are usually needed for lambs at weaning in mid-summer and thereafter at two monthly intervals as weaners are moved on to clean pastures. These paddocks should be prepared for at least three months before they are required.

1. Prepare low-contamination paddocks for lambing ewes and/or weaners for at least three months prior to use

IMPORTANT: If low-contamination pasture is scarce it should be reserved for weaners rather than lambing ewes

2. Restrict joining to as short a period as possible – five weeks (two cycles) is ideal

A short joining period will ensure that weaning is not delayed by late born lambs. Ram harnesses can be applied and the ewe flock divided into two groups based on crayon marks.

3. Remove all ewes showing signs of wasting shortly before lambing and again at marking

This will reduce pasture contamination for lambs.

4. Move lambing flock onto low-contamination pasture shortly before lambing

Run lambing flocks at the lowest stocking density possible.

5. Wean lambs early onto a second low-contamination pasture

Weaning can occur when the youngest lambs are seven weeks old if pastures are highly nutritious. A green, legume-dominant pasture is generally satisfactory. Early weaning will separate lambs from the main source of OJD infection (their dams and the pastures contaminated by their dams).

Figure 1: Management guidelines for OJD-infected flocks

For more information

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