BOVILIS
a world of protection

Coughing Cows
It's the last thing you want to hear

Vaccinate replacement heifers with

Bovilis® Huskvac

The only vaccine for the prevention of lungworm.

MSD
Animal Health

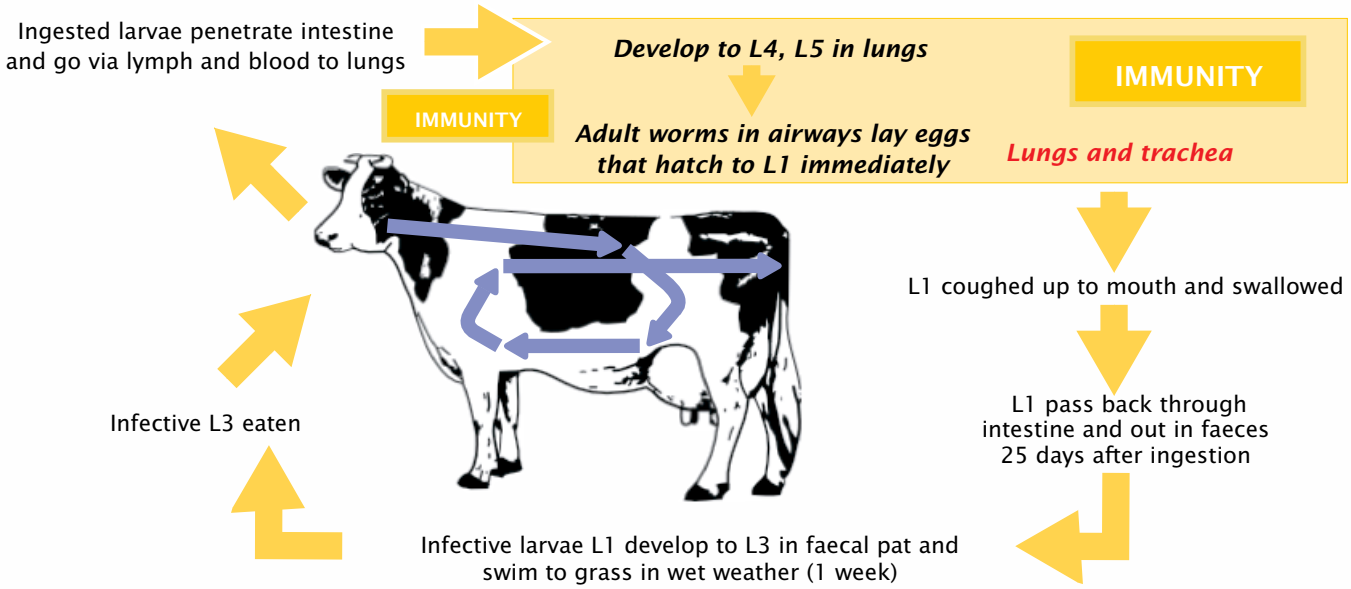
THE RISK

Lungworm (hoose) has often been considered a disease of younger animals, but it can and does affect adult cattle in the milking herd.

Recent reports in Europe, the UK and even in Ireland show that it can cause serious and significant losses in milking herds.

There has been an increase in the prevalence of hoose reported in Irish dairy cows.[1,2]

Dictyocaulus viviparus (Lungworm) life cycle



Immunity

There are 2 main types of immunity against lungworm larvae[3]:

The first type of immunity is stimulated by incoming larvae in the pre-lung phase of disease. It is strong but requires a persistent challenge to be maintained. This immunity disappears within 4 to 6 months without leaving a memory, in the absence of reinfection.

This period of lack of stimulation, through absence of exposure, is called the “immunity gap”.

The second type of immunity, lung phase, is stimulated by adult lungworm. It is dependent on the dose of lungworm to the lungs and persists for a long time. Lung phase immunity prevents maturation of larvae in the lungs.

If cattle are exposed to large numbers of larvae after the pre-lung (larval) immunity wanes, they can develop severe inflammatory responses, for example severe coughing, even though they may have firm lung phase immunity to adult worms from previous exposure to adult lungworms. They often do not pass lungworms in their faeces.

Reasons for increased incidence of lungworm infection

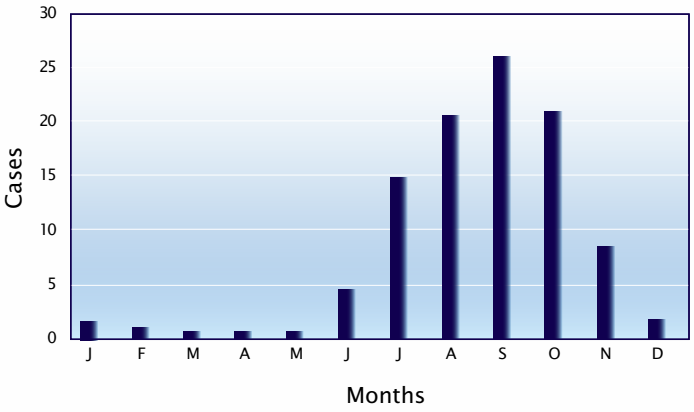
Control strategies incorporating highly effective anthelminthics reduce the antigenic stimulus and therefore reduce the level of acquired immunity.

The majority of lungworm outbreaks occurring in adult cattle are due to exposure to lungworm following the reduction in immunity caused by lack of exposure. Some anthelminthics can cause an interruption in the natural cycle of lungworm infection. It is also caused by housing overwinter.

Bovilis Huskvac can provide effective immunity against the challenge of lungworm in at risk dairy cattle in the second year of grazing and in insufficiently exposed adult cows.

Monthly incidence of hoose

Hoose is most commonly seen during the summer months (see graph below). However, depending on weather conditions and stocking density, cases are reported all year round.[4]



Diagnosis of hoose

- Grazing history
- Eosinophilia in bloods
- Elisa test on milk samples or blood
- Lungworm larvae in faeces in some cases (Baermann technique)

Factors influencing outbreaks[5]

- Previous history of lungworm on farm - 10% of cows are carriers
- Use of broad spectrum long-acting wormers preventing immunity development
- Stock management at pasture, for example heavy continuous use of pasture
- Bought-in animals
- Climate change - favoured by mild wet winters
- Survival of L2 on pasture
- Lack of vaccination with Bovilis Huskvac

Lungworm in lung tissue

Clinical signs of lungworm infection

- Cough which can be severe
- Dyspnoea
- Weight loss
- Marked reduction in milk yield
- Reduced fertility
- Extended calving interval
- Early culling
- May cause death

Control

The most effective control for *D. viviparus* and gastro-intestinal worms is to vaccinate with Bovilis Huskvac and worm cattle strategically, along with good pasture management. A single oral dose of 25 mls contains 1000 viable irradiated *D. viviparus* larvae.

Bovilis Huskvac stimulates pre-lung or larval immunity without the risk of clinical disease. Immunity is sufficient to prevent disease in the next grazing season, and further field challenge and booster vaccination provides prolonged immunity.

Calves and adult cattle

Only healthy animals should be vaccinated, from eight weeks of age, with a primary course of two oral doses, four weeks apart and with turnout two weeks later. Calves vaccinated in the first grazing season will need to be a minimum of 14 weeks of age at turnout. Wormers should not be given until two weeks after the second dose.

Cattle, not vaccinated in the first grazing season, will need to be vaccinated with a full primary course of vaccine 2 weeks prior to turnout in the second season.

Booster doses

Lungworm immunity is maintained from season to season by exposure to the lungworm larvae, which will occur from grazing normal pastures after vaccination.

If exposure has not occurred then a single booster dose will be required prior to turn out.

Worming or vaccination or both?

Some of the more broad spectrum wormers alone may control gastro-intestinal worms but may not allow sufficient persistent immunity to develop to lungworm.

There is a great risk in the Autumn months for first grazing season animals, when the wormers administered earlier in the season are no longer effective, in addition to the risk following return to pasture after housing.

Vaccinate with **Bovilis Huskvac** to ensure the herd gets the controlled challenge required for immunity development.

Wormers are subsequently used judiciously in accordance with pasture management to effect complete control.

LUNGWORM CONTROL PROGRAMME		
AGE	**FIRST GRAZING SEASON**	**SECOND GRAZING SEASON**
AUTUMN CALVES	**Vaccinate with Bovilis Huskvac before turnout and use anthelmintics through grazing season judiciously in conjunction with pasture management**	**Boost with Bovilis Huskvac before turnout**
SPRING CALVES (insufficient time to vaccinate)	**Appropriate use of wormers through grazing season in conjunction with pasture management to prevent lungworm and gutworms**	**Vaccinate with Bovilis Huskvac before turnout**

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Product Information

Each single oral dose (25 ml) of **Bovilis Huskvac** contains:
Dictyocaulus viviparus 3rd stage irradiated larvae > 1000 viable larvae
< 2000 viable larvae

For the active immunisation of cattle to reduce clinical signs and lesions of parasitic bronchitis attributable to *Dictyocaulus viviparus* (lungworm). The full dose (25ml) of Bovilis Huskvac should be administered orally. Onset of immunity: 2 weeks after completion of the basic vaccination scheme. Duration of immunity: lungworm immunity is maintained from season to season by the exposure to lungworm larvae, which in most cases occurs from the grazing of normal pastures. If such exposure does not occur, a single booster dose is required prior to each season's turnout. Contra-indications, warnings, precautions: Do not use in calves showing any signs of illness, particularly those exhibiting any signs of respiratory distress. Routine vaccination of housed or suckled young stock prior to exposure to field lungworm challenge will help protect the calves and help reduce the levels of pasture contamination with lungworm larvae. However, owing to the ability of lungworm larvae to survive on pasture, calfhood vaccination programmes to control lungworm infection can only be successful if all susceptible calves are vaccinated in the spring before exposure to natural field infection occurs at turnout or weaning. A good immune response is reliant on the reaction of an immunogenic agent and a fully competent immune system. Immunogenicity of the vaccine antigen will be reduced by poor storage or inappropriate administration. Immuno- competence of the animal may be compromised by a variety of factors including poor health, nutritional status, genetic factors, concurrent drug therapy and stress. Vaccinate only healthy animals of 8 weeks of age and older. Following vaccination, vaccinated stock should not be mixed with unvaccinated stock or allowed to graze on pastures recently used by unvaccinated stock until 2 weeks after the second dose of Bovilis Huskvac. Note: For optimum benefit it is important that the calf is exposed to pasture carrying some infection after this time, as this low level exposure enhances the immunity induced by vaccination with Bovilis Huskvac. User warnings: Wash hands after use. Disposal advice: Dispose of waste material by boiling, incineration or immersion in an appropriate disinfectant approved for use by the competent authorities. Storage: Store in a refrigerator (2 °C - 8 °C). Do not freeze. Withdrawal period: Zero days. Further information: Transient episodes of coughing may occur approximately 7 days after either dose of Bovilis Huskvac but these usually subside in a few days. The product can be used during pregnancy. No information is available on the safety and efficacy of this vaccine when used with any other veterinary medicinal product. A decision to use this vaccine before or after any other veterinary medicinal product therefore needs to be made on a case by case basis. To ensure residual effects of long-acting anthelmintics and endectocides or sustained release bolus preparations do not interfere with the development of immunity following lungworm vaccination, avoid vaccination during the period of their activity, and do not use these veterinary medicinal products until 14 days after the second dose of Bovilis Huskvac. Legal categories: ROI POM(E) NI POM-V .

Use Medicines Responsibly

References

1 Murphy (2013) Preventing lungworm infection in adult cattle. Vet I J, 196-200
2 Holzhauer et al, (2011) Lungworm outbreaks in adult dairy cows, estimating economic losses and lessons to be learned, Vet Rec, 169, 494-499.
3 Michel and Mackenzie (1965) Duration of the aquired resistance of calves to Dictyocaulus viviparus Res Vet Sci 6 344-395
4 Anon (2013) DAFM/AFBI All-island Animal Disease Surveillance Report 2012
5 Van Dijk (2004) The Epidemiology and control of Dictyocaulosis in Cattle, BCVA, 133-146.

Further information is available from
MSD Animal Health, Red Oak North, South County Business Park, Leopardstown, Dublin 18, Ireland.
Tel: +353(0)1 2970220. E-Mail: vet-support.ie@merck.com Web: www.msd-animal-health.ie

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