

NADIS Health Bulletin



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Health Quiz

Vaccines: Their Uses and Application in Progressive Sheep Farming Part 2: Other Vaccines - (excluding Clostridia and Pasteurella)

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It is unfortunate that the reputation of vaccines (Fig 1), particularly bluetongue vaccines, has faced considerable attack in recent months without evidence or justification. Farmers must not forget the large number of highly efficacious vaccines without which intensive sheep farming would prove very difficult indeed. Bluetongue vaccine is no different from the other sheep vaccines and any adverse reaction or lack of efficacy is much more likely to have resulted from inappropriate storage of vaccine, faulty injection technique, and/or vaccination of lean/emaciated sheep (Fig 2).

In addition to bluetongue, the important sheep diseases protected by vaccination include infectious abortion namely enzootic abortion of ewes (Fig 3) and toxoplasmosis (Fig 4), erysipelas, and orf (clostridial diseases and pasteurellosis were discussed previously). Vaccination against paratuberculosis in sheep can be carried out under licence in the UK. There are few flocks where vaccination against most/all of the diseases listed above would not prove to be financially beneficial in addition to animal welfare improvements.

Abortion

Infectious causes of abortion are most common after day 100 of pregnancy. While sporadic losses are variably attributed to handling procedures, feeding (Fig 5) or movement, an abortion rate in excess of two per cent is suggestive of an infectious aetiology and laboratory investigation is strongly recommended. Highly effective vaccines are available against the two most common causes of infectious abortion in sheep namely enzootic abortion of ewes and toxoplasmosis.

Chlamydial abortion

Synonyms: enzootic abortion of ewes (EAE), *Chlamydomphila abortus* infection

Chlamydial (*Chlamydomphila abortus*) abortion is a major cause of abortion, and ewe and lamb deaths. Disease is transmitted by the oral route following exposure of susceptible females to high levels of



Fig 1: Farmers must not forget the large number of highly efficacious vaccines without which intensive sheep farming would prove very difficult indeed.



Fig 2: Vaccination of lean/emaciated sheep may not confer adequate protection nor transfer of immunity to the lambs in colostrum.

infected uterine discharges/aborted material. Infection does not result in clinical signs unless the ewe is more than six weeks from the due lambing date, infection remaining latent until the subsequent pregnancy. Infection typically results in the abortion/birth of fresh dead and/or weakly lambs during the last three weeks of gestation. Live lambs rarely survive more than a few hours despite

supportive care. Retention of foetal membranes may lead to metritis and a sick ewe.

Vaccination offers an excellent means of control for farms buying breeding replacements from non-accredited sources, and in those flocks with an endemic *C. abortus* problem. In the UK there is a choice of either inactivated or live *C. abortus* vaccines with administration before the start of the mating period. Vaccination of sheep already infected with *C. abortus* will not prevent abortion but may reduce the incidence. It is recommended that vaccination be repeated after three years.

Vaccination against *C. abortus* is expensive but this cost must be divided over three years. In many commercial situations, re-vaccination is not performed without appreciable loss of immunity thereby reducing the cost to approximately £0.50 per annum over the productive lifespan of the average commercial ewe. The cost of abortion is often quoted as £65 per aborted ewe

Toxoplasmosis

Toxoplasma gondii infection during pregnancy can result in embryo/early foetal loss, foetal death and abortion/mummification, and birth of weakly lambs. Infection during early pregnancy may be manifest as embryo/early foetal loss with an increased number of returns to service after irregular extended periods. Embryo/early foetal loss is manifest as an increased barren rate, often above 8 to 10 per cent when 4 per cent is acceptable and 2 per cent the target after a 6 week breeding period. Toxoplasma infection during mid pregnancy results in abortion or production of weakly live lambs near term and a small mummified foetus.

Vaccination using a live attenuated vaccine provides excellent immunity to natural infection and is administered at least three weeks before the breeding season. Care should be taken when administering the vaccine with detailed safety instructions are provided by the manufacturer.

The vaccine is expensive but as a single vaccination effectively provides lifelong immunity, this cost should be divided over the sheep's productive life with a more realistic cost of 50 to 60 pence per pregnancy.

Erysipelas

Erysipelothrix rhusiopathiae causes an infective arthritis with high morbidity and severe lameness typically affecting growing lambs aged six weeks to four months (Fig 6 & 7).

Erysipelas can be controlled by vaccination of ewes with a similar programme to clostridial vaccines. Annual vaccination costs approximately 20 pence per dose. Chronically lame lambs do not grow well and cannot be presented at livestock markets representing considerable financial loss.

Contagious pustular dermatitis

Also referred to as orf, scabby mouth, contagious ecthyma. Contagious pustular dermatitis (CPD)



Fig 3: Vaccines are highly efficacious in providing protection against enzootic abortion of ewes.



Fig 4: Abortion caused by toxoplasmosis can be prevented by timely vaccination.



Fig 5: Sporadic abortion losses can be caused by overcrowding and handling procedures.



Fig 6: Erysipelas causes an infective arthritis with high morbidity and moderate to severe lameness typically affecting growing lambs aged six weeks to four months.



Fig 7: Erysipelas is a major welfare concern in lambs but is readily prevented by vaccination.

virus most commonly results in proliferative lesions following trauma of the coronary band and mouth being particularly severe in artificially-reared lambs less than two months-old. Outbreaks of CPD (Fig 8) may occur within 10 to 14 days of pasture change especially onto those pastures which contain thistles, gorse etc. or stubbles which cause superficial trauma to the lips/mouth.

Control following scarification with a live vaccine proves difficult to quantify but is routinely undertaken in many flocks in the UK. Vaccine must never be used in a clean flock. Vaccination is by scarification of the inner thigh in lambs and the axillary region in ewes. The timing of vaccination is approximately 6 weeks before the anticipated occurrence of disease. Care must be exercised during handling the live vaccine as it is affected by high temperatures and inactivated by disinfectants.

Paratuberculosis, Johne's disease

Johne's disease is a very common disease of sheep in the UK, and characterised by emaciation but not, as in cattle, chronic severe diarrhoea (Fig 9). Johnes disease presents as chronic weight loss/low body condition score and poor fleece in individual middle-aged (typically 3 to 4 years-old) sheep with normal dentition and fed an appropriate plane of



Fig 8: Severe outbreaks of CPD may occur on pastures containing thistles, gorse etc. or stubbles which cause superficial trauma to the lips/mouth.



Fig 9: Vaccination against Johne's disease may afford a benefit:cost in some flocks.

nutrition. The annual ewe mortality rate may be as high as 5 per cent in infected flocks.

Encouraging results with much reduced disease prevalence have been reported following adoption of a vaccination programme in several countries. Farmers are encouraged to discuss control measures, including the vaccination strategy, with their own veterinary surgeon as part of their flock health programme.

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NADIS Health Bulletins are designed to improve farm income, animal health and welfare by promoting disease control and prevention.

Discuss how health planning can improve the profitability of your farm with your veterinary surgeon.

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