

The Flockmaster's Guide to Abortion & Vaccination



A practical guide to improved
productivity through the control of
infectious abortion in your flock

 *intervet*

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Introduction

Lambing percentage is still a major factor in determining profit and even a small improvement will significantly increase your income. In a lowland flock for example, an increase of just 5% can increase net profits by up to 70%.

The good news is that for most farmers, this level of improvement is relatively easy to achieve, because so many of the lambs they lose are the victims of infectious diseases that can be controlled.

Fortunately, the significant infections causing abortion in sheep have been identified and can be controlled using cost effective practical solutions. This booklet explains the important facts about the diseases, including their prevalence, tips on diagnosis and how to cope with an acute outbreak.

Most importantly, it shows how a sensible approach to their control can achieve long term financial benefits.



To increase your income, increase your lambing percentage

Most lowland flocks could achieve a lambing percentage of over 170%, whilst hill flocks can achieve close to 150%, if given the correct management.

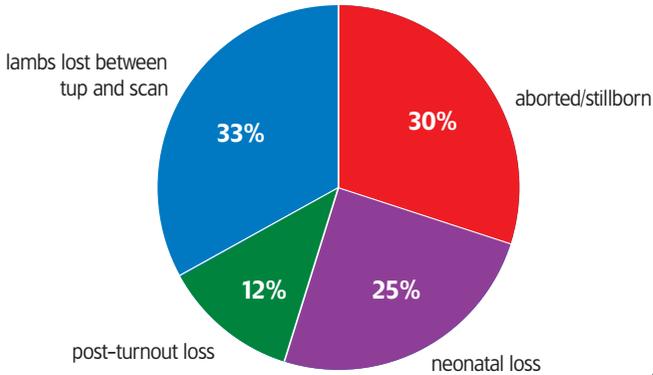
If that surprises you, then you're not alone. With a national lowland average of just 156%, farmers seem to have accepted relatively low lambing performance for generations. Many hill flocks accept even bigger losses.

Even more startling is the financial effect that accompanies any improvement in performance. With the pressures to improve returns in farming and the removal of subsidies, it is important to maximise your productivity wherever possible and a straightforward way to do this is to reduce your lamb losses.

Why aren't you getting more lambs?

Contrary to popular belief, the weather and ewe nutrition are not the only causes of lost lambs. Whilst abortion is the most obvious cause, early embryonic death leading to barren ewes and weak lambs that die shortly after they are born are also significant contributors to the loss in productivity.

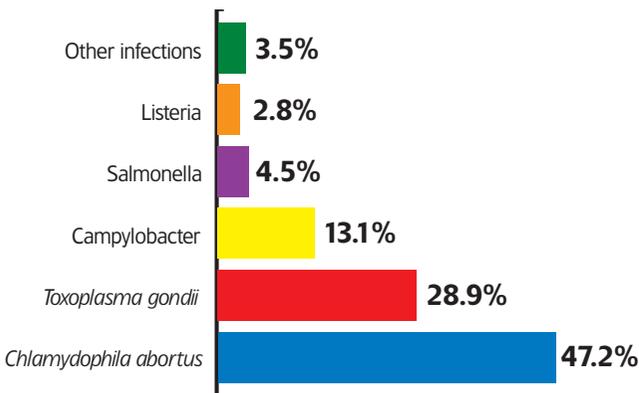
When are lambs lost?



Source: ADAS average lowland flock

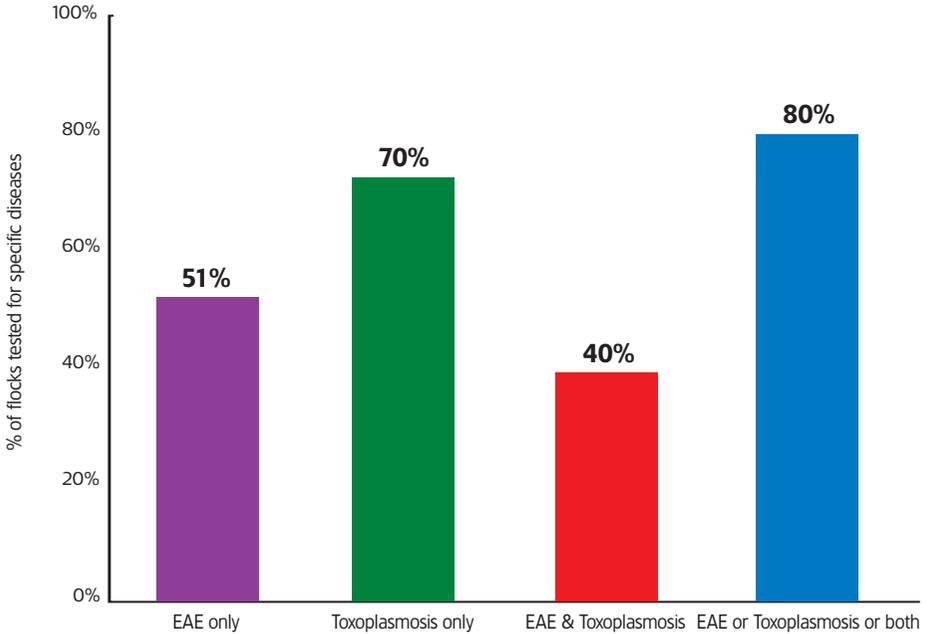
In many cases, the cause of the losses is an infection in the ewe during pregnancy which may be responsible for the barren ewe seen at scanning and not just the more obvious abortions often seen. As well as weak and sickly lambs that die soon after birth, many farmers also accept barren ewes and abortion rates of between 5-10%. However, anything above 2% is likely to be due to an infectious cause and should be investigated.

The most common infections



Source: VIDA submissions 1996-2003

Just two infectious diseases, *Enzootic Abortion* and *Toxoplasmosis* account for over three-quarters of all abortions diagnosed in veterinary laboratories nationwide. There is however, evidence that they are even more prevalent.



Source: Intervet's Flockcheck survey 2003

In recent surveys, 4 out of 5 flocks were found to be harbouring at least one of these infections, and one third of flocks had both – but in many cases the effects were so insidious that few farmers had spotted they were there. Despite this they were constantly eroding the level of productivity of the farm.

Summary of the main infections

	Enzootic abortion	Toxoplasmosis
Cause	Bacterial type organism - <i>Chlamydophila abortus</i> (<i>Chlamydia psittaci</i>)	Coccidial type organism - <i>Toxoplasma gondii</i>
Sources of infection	Aborted placenta/lamb Carrier sheep	Hay, straw, cereal, concentrates, pasture (contaminated with cat faeces)
Appearance of abortion	Fresh lambs Thickened placenta Ewe OK	Fresh Lambs Mummified lambs Leathery or white spot placenta Ewe OK
Treatment	Long acting oxytetracycline	In-feed coccidiostat
Control	Cull aborted ewes Vaccination Buy in EAE-free or accredited replacements	Keep aborted ewes Vaccination Medicated feed Keep only adult, neutered cats

Unfortunately, there are no licensed vaccines for the other diseases commonly found to cause abortion in sheep.

Campylobacteriosis	Salmonellosis	Listeriosis
Bacteria – Campylobacter	Bacteria – Salmonellae of various strains	Bacteria – Listeria monocytogenes/ ivanovii
Carrier sheep Wildlife (birds, voles)	Infected stock Contaminated foodstuffs	Soil Soil-contaminated silage
Nothing specific Ewe OK	Nothing specific Ewe may be ill	Nothing specific Ewe OK (may get nervous form of the disease in same flock)
Antibiotics generally not effective	In feed/injectable antibiotic	Nothing effective
Keep aborted ewes But mix with non pregnant replacements to allow ewes to develop immunity.	Keep aborted ewes	Keep aborted ewes

When faced with an outbreak, the only option is to use antibiotics in the hope that this can reduce the impact of the disease. Hygiene and husbandry become very important in reducing the spread of the disease.

Enzootic abortion (EAE)

What causes it?

Enzootic abortion is caused by a bacterial-type organism called *Chlamydophila abortus* (formerly known as *Chlamydia psittaci*).

The disease is also a zoonosis. It can cause abortion in women, and flu-like symptoms in both children and adults. Considerable care should therefore be taken when handling sheep during and after lambing.

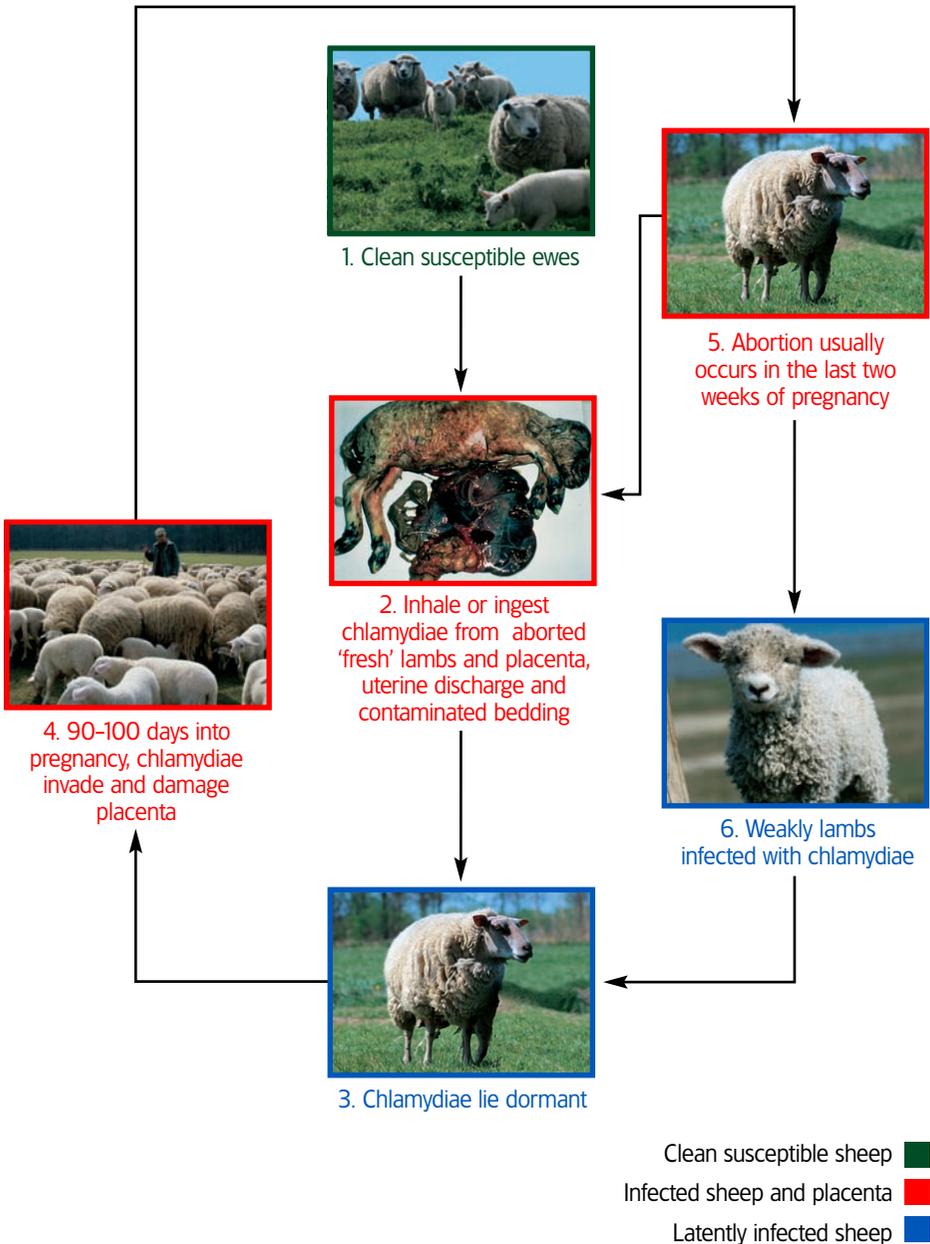
Where does it come from?

The disease usually arrives on farm for the first time when infected replacements are bought-in. Wildlife can also be implicated in the transmission of the disease by carrying infected placentae from one farm to another. The organisms are then passed from ewe to ewe in infected afterbirth, on new lambs and in vaginal discharges for up to two weeks post lambing. This can lead to significant contamination of the bedding. Lambs can also be born already infected from mothers carrying the disease.

The major problem with EAE, and what makes it so easy for the disease to enter a flock unnoticed, is “latency”. When a ewe aborts she sheds large numbers of the EAE organism. These can infect any ewe or lamb that comes into contact with them. However, these newly infected sheep will not show any signs of EAE straight away and there is no test to identify them. The organism remains dormant in the body until the next lambing, with adult ewes the next season but in an infected lamb it can be longer, eg in shearlings two years after they are infected. Approximately three weeks before lambing the placenta becomes inflamed and abortion occurs.

Following an abortion the ewes will often continue to have normal lambings in subsequent years. However, these ewes are carriers of the disease and may shed organisms every year even if they produce normal looking lambs. This shedding infects their own lambs but also any other in contact sheep.

Enzootic abortion of ewes- spread of infection



Whose flock is at risk?

- Anyone who buys in replacements from a source that isn't known to be EAE free
- Unvaccinated flocks
- Outdoor lambing flocks
- Hefted sheep

What effect does it have?

At its most obvious, EAE can cause devastating abortion storms, often affecting approximately 25% of ewes. This happens when the disease attacks a flock containing many susceptible, previously uninfected sheep. However, if a large proportion of the flock is already infected it will cause ongoing losses of around 5% a year.

Can I control it through management?

Once your flock has the disease, it is very unlikely that it will ever disappear completely due to latency. Tests can only identify an infected ewe after she has aborted and spread the disease still further. Even a closed flock with good bio-security is vulnerable from material brought on farm by scavengers; and of course, these are the flocks that are most at risk of a devastating abortion storm.

Only a vaccination programme can control its effects.

Toxoplasmosis

What causes it?

A microscopic parasite called *Toxoplasma gondii*

Where does it come from?

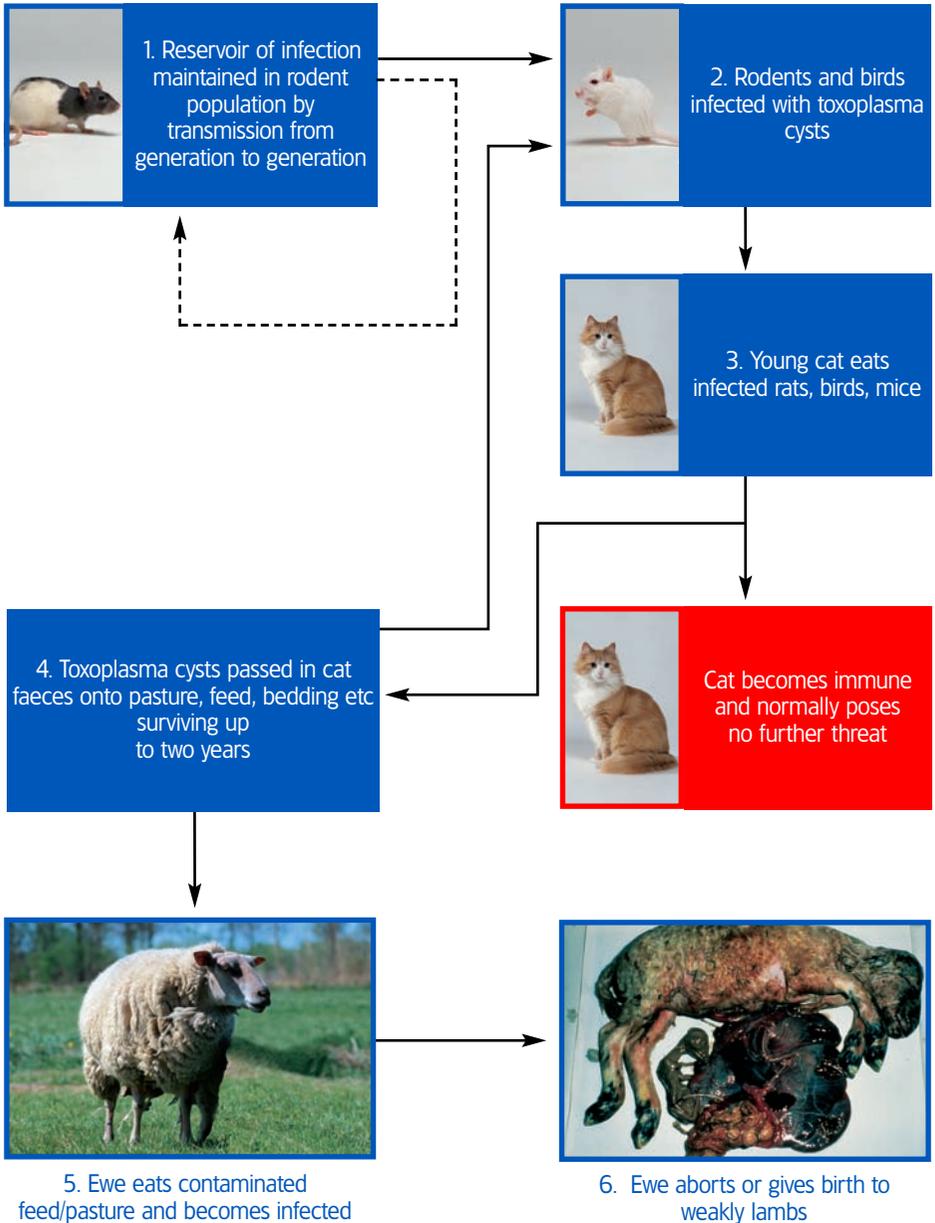
The source of the eggs is most commonly contaminated cat faeces in barns, feed stores, bedding, and manure or directly on to pasture. A single cat dropping can contain enough eggs to infect more than 100 ewes. Eggs can survive on farm for well over a year. Toxoplasma eggs are then eaten by ewes in feed, forage or on pasture. Toxoplasma is not commonly passed from sheep to sheep.

Whose flock is at risk?

Toxoplasma is an environmental contaminant so all flocks are at risk. Cats are ubiquitous in the UK and it only takes one brief visit to significantly contaminate the farm or pasture. 70% of UK flocks are believed to have been in contact with toxoplasmosis (FlockCheck data 2004).



Transmission of *Toxoplasma gondii* between cats and sheep



What effect does it have?

- Losses both during and after pregnancy
- Barrenness
- Reabsorptions
- Mummified foetuses
- Abortions
- Stillbirths
- Weakly lambs

Heavy infections, typically in small groups, can cause infertility in half or more of the ewes. But normally it's a grumbling problem, reducing the number of lambs by around 6%.

Can I control it through management?

The only way to effectively avoid toxoplasmosis, is through vaccination. Feeding a coccidiostat can be of benefit but, as toxoplasmosis can strike at any time, in feed medication needs to be throughout pregnancy, and can therefore be financially prohibitive.



Action in the face of an outbreak

The devastating impact of enzootic or toxoplasma abortions will have been experienced by many. Abortion storms are caused when EAE affects a largely clean, uninfected flock which is unvaccinated. The affects of toxoplasma on vulnerable flocks are often insidious and therefore harder to identify. However abortion storms can occur in a naïve flock.

These effects can be minimised by the following steps:

- If any abortion occurs, act fast (it may be the beginning of an enzootic abortion storm). The earlier you determine the cause and treat other ewes, the more lambs may be saved
- Isolate and mark the affected ewe
- Contact your vet
- Collect freshly aborted lambs and placentae if present; put in separate, clean bags and take to your local Veterinary Investigation Centre. Two or three will allow you to identify most of the possible infectious causes
- If aborted material is not available, ask your vet to take blood samples for EAE and toxoplasma. These samples must be taken within 4 months of the abortion to gain relevant results. Note that you cannot blood test for some of the less common causes. Ask your vet about Intervet's FlockCheck
- Be careful when handling problem ewes & aborted material and always wash your hands afterwards. Pregnant women and children are particularly at risk if infected
- Dispose of aborted material carefully and appropriately

If the diagnosis is EAE

- Keep aborted ewes separate from the rest of the flock, especially any future replacements

- Do not foster lambs onto aborted ewes
- Ask your vet about antibiotic injections for EAE. The best treatment in the face of an outbreak is to inject oxytetracycline (eg Engemycin 10% DD). It won't stop the outbreak completely, nor will it prevent other ewes from being infected and aborting next year, but it can reduce the number of abortions in the current season
- Look to future control with Enzovax

EAE control

Vaccination with Enzovax will effectively control EAE within your flock.

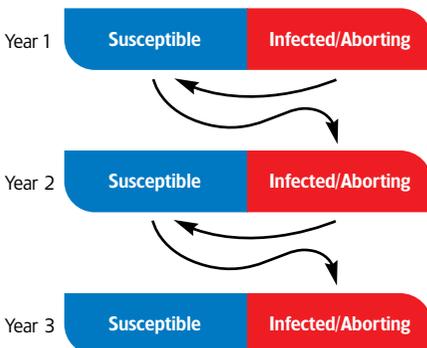
As you can't identify latently infected ewes, any ewe may pose a threat of infection to another. It is best to vaccinate the entire flock in the first year. Thereafter, vaccinate all replacements, regardless of source.

Generally, only one vaccination is needed for the lifetime of the ewe.

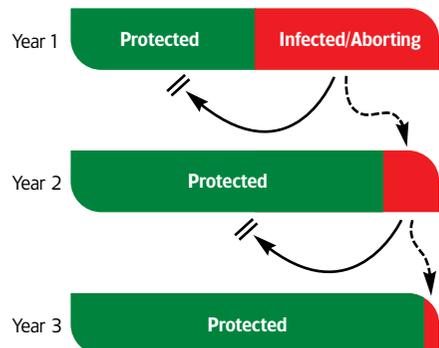
In any infected flock, a proportion of ewes will already be latently infected. Some of these ewes may still abort at the first lambing, because the infection is established in the ewe's womb, but vaccination has been shown to reduce the number of abortions in these ewes.

Infection versus Protection

Unvaccinated flock



'Enzovaxed' flock



If the diagnosis is toxoplasmosis

Unfortunately, little can be done this season. Some benefit may be gained from using in-feed medication during the remaining pregnancy of the ewes. The aborted ewe need not be isolated as the disease cannot spread from her to other ewes.

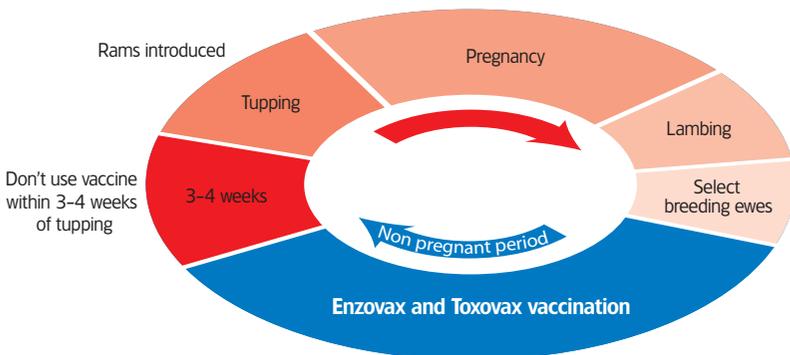
Toxoplasmosis control

Whole flock vaccination with Toxovax is cost-effective, often producing around 6% more lambs. However, as older ewes do not pose a risk to other sheep, in some situations it may be an option to vaccinate the younger half of the flock. Then vaccinate all replacements as they enter the flock.

Immunity is usually boosted by natural challenge, so again only one vaccination is generally required during the lifetime of the ewe. Boosters may be considered in unusual situations but this should be discussed with your veterinary surgeon.

Unlike EAE, Toxoplasmosis cannot be passed from sheep to sheep. Older ewes are more likely to have been previously exposed to the disease and therefore will possess some immunity. Hence vaccinating the younger animals in the flock must be the first priority although for maximum disease control, whole flock vaccination is the gold standard.

Using the vaccines



Vaccinate any time in this period until 3-4 weeks prior to tugging

Vaccination – the benefits

More often than not, vaccines have been used in response to a major disease outbreak (such as an enzootic abortion storm), rather than as a means of increasing lamb production. However, these diseases can be having a significant impact on productivity even when not causing an obvious problem such as an abortion storm.

If toxoplasma is present on your farm, vaccination with Toxovax has been shown to produce a 6.4% increase in the number of lambs (4). The situation can be more complex with EAE, if many ewes are already carriers of the disease. However most farms will see a significant benefit from vaccination during the following season.

The costs of lowered productivity are so great that vaccination is a cost effective route to the control of these diseases. Many farmers see benefits where they didn't realise there was a problem, for example having healthier and more viable lambs born. A reduction in the abortion rate between 0.5% to 1.5% will see the investment in vaccination pay for itself. These, and greater improvements are easily achieved.



For further advice about EAE or Toxoplasmosis and the vaccines available to assist in their control, please contact your veterinary surgeon. Alternatively, contact Intervet's support group on 01908 685685.

Enzovax

Chlamydomphila abortus, strain TS1B

Contra-indications

1. Do not vaccinate pregnant animals
2. Do not vaccinate animals less than 4 weeks before tupping
3. Do not vaccinate animals which are being treated with antibiotics, particularly tetracyclines.
4. Enzovax and Toxovax may be administered at the same time but should be given at separate sites and not mixed. No vaccine other than this should be administered within 14 days before or after vaccination with Enzovax.

Operator Warnings

1. Operators should wear gloves when handling the vaccines.
2. Enzovax should not be handled by pregnant women or women of child bearing age as the vaccine may cause abortion.
3. Enzovax should not be handled by persons who are immuno-deficient (eg AIDS sufferers, persons undergoing chemotherapy or taking immuno-suppressive drugs). If in any doubt, you should consult your GP.
4. Care should be taken to avoid self-injection, but if this occurs, immediate medical advice should be sought and the doctor informed that self-injection with living chlamydial vaccine has occurred. Tetracycline therapy is the current recognised treatment for chlamydiosis in humans.

Withdrawal Period

Animals should not be slaughtered for human consumption before 7 days after vaccination.

For animal treatment only. Keep out of the reach of children.

Toxoplasma gondii, strain S48

Contra-indications

1. Do not vaccinate pregnant animals
2. Do not vaccinate animals less than 3 weeks before tupping
3. Toxovax and Enzovax may be administered at the same time but should be given at separate sites and not mixed. No vaccine other than this should be administered within 14 days before or after vaccination with Toxovax.

Operator Warnings

1. Operators should wear gloves when handling the vaccines.
2. Toxovax should not be handled by pregnant women or women of child bearing age as the vaccine may interfere with normal foetal development.
3. Toxovax should not be handled by persons who are immuno-deficient (eg AIDS sufferers, persons undergoing chemotherapy or taking immuno-suppressive drugs). If in any doubt, you should consult your GP.
4. Living tachyzoites can cause disease in man. Care should be taken to avoid self injection and to avoid vaccine getting in to the mouth or the eyes. In the case of self injection, immediate medical advice should be sought and the doctor should be informed that self injection with a living tachyzoite toxoplasma vaccine has occurred. Pyrimethamine therapy is the current recognised treatment for toxoplasmosis in humans.

Withdrawal Period

Animals should not be slaughtered for human consumption before 6 weeks after vaccination. The carcasses of animals dying or being slaughtered within this period must be disposed of according to national requirements.

For animal treatment only. Keep out of the reach of children.

Intervet would like to acknowledge the contributions of Lesley Stubbings, BSc (Hons) in the preparation of this guide.

Supplied with the compliments of Intervet UK Ltd
Enzovax and Toxovax are only available through your veterinary surgeon.
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