



WELCOME TO
Flock Health

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2016 NEWS



Infectious Abortion in Sheep

by Jennie Lomas BSc (Hons) BVSc MRCVS

Infectious abortion is one of the major flock health problems faced by sheep farmers and has a significant financial impact on production. A wide range of microorganisms including bacteria, viruses and protozoa are capable of infecting sheep and causing abortion.

Although the prevalence of the different types of infectious abortion varies from year to year and from area to area, overall the four most common causes of infectious abortion throughout the UK are:

- Enzootic Abortion (EAE) caused by *Chlamydia abortus* (bacteria)
- *Toxoplasma* (protozoa)
- *Campylobacter* (bacteria)
- *Salmonella* – various serotypes (bacteria)

The cost of abortion is variably quoted as £85 per aborted ewe. All abortions should be regarded as infectious until proven otherwise.

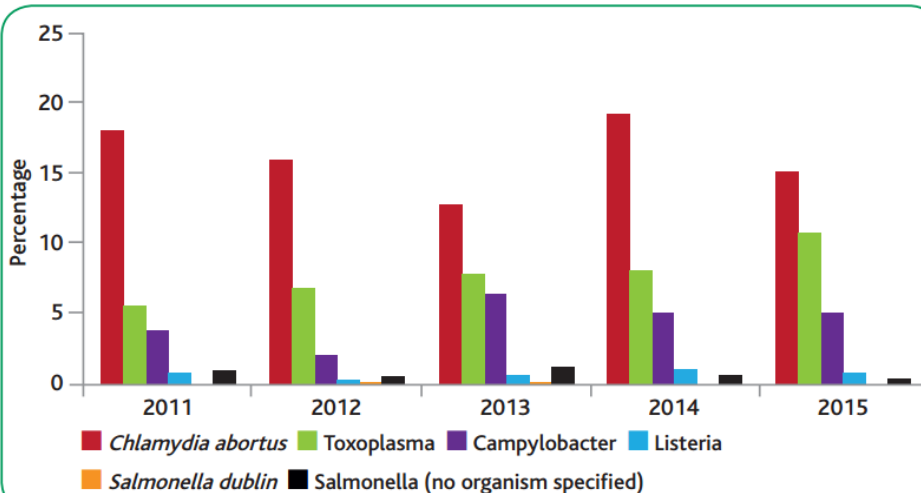


General Control Measures for Sheep Abortion

- 1) Isolate all ewes that abort as they may excrete infection in vaginal discharges for some time after abortions. (*Chlamydia* is able to survive up to 6 weeks in bedding and on the ground).

- 2) Appropriate samples should be collected and submitted for laboratory diagnosis. These include fetal serum/fluid, fetal and placental tissues for pathology ^ microbiology.
- 3) All ewes should be identified (either via tags or a record keeping system).
- 4) Fetal and placental tissues should be handled and disposed of carefully to prevent spread of infection. Due to the risk of human infection, all infected material must be handled with care. Please note, Both EAE and *Toxoplasma* are transmissible to people and as such, pregnant women and people with compromised immune systems should avoid all involvement with lambing ewes including handling contaminated clothing and cat faeces.
- 5) Disinfect pens, allow them to dry and use fresh bedding.

Ovine abortion diagnoses for APHA diagnostic submissions 2011-2015 as a percentage of all abortion diagnoses



Source: Animal and Plant Health Agency



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Tel: (01332) 294929

farmandequine@scarsdalevets.com

Please note that telephone calls are recorded for quality and monitoring purposes.

Enzootic Abortion (EAE)

The cause of EAE (enzootic abortions of ewes) is due to the bacteria *Chlamydia abortus*. Abortions caused by EAE typically occur in the last few weeks of pregnancy. The bacteria cause disease by multiplying in the cells of the placenta, evoking an intense inflammatory response and damaging the placenta. Placentas (afterbirth) of infected sheep are usually dark red, thickened and have cream coloured material stuck to the membrane between the cotyledons (buttons).

The ewe is not usually ill prior to the abortion, but may exhibit a vulval discharge and display slight malaise for 48 hours prior. Usually a stillborn lamb, 2 – 3 weeks prior to the expected lambing date is presented. Most still born lambs appear normal; however some may also have a pot-bellied appearance due to the collection of fluid under its skin. However, it is not uncommon to produce a full term stillborn or live weakly lambs, or even one dead lamb along with one or more live lambs. Ewes commonly appear healthy following abortion, but may continue to excrete a dirty vulval discharge for several days.

The most important sources of infection are dead lambs, afterbirth and vaginal discharges from aborting ewes as these are heavily contaminated with the bacterium.

The bacterium can lead to abortion in the following ways:-

- Abortion of the ewe's current pregnancy
- A latent (silent) infection, leading to abortion the following year (if infected in late pregnancy)
- Ewe lambs born to infected ewes may also become infected and can abort in their first pregnancy

Ewes which have aborted to *C. abortus* become immune and will not usually abort again due to this cause. However, a proportion of ewes which abort or produce weak lambs with infected placentas will retain the organism in their bodies and may excrete it at a subsequent oestrus cycle and/or lambing.

Infection is introduced into a 'clean' farm by purchasing ewes that are latently infected. The chlamydiae bacteria are mobilised during pregnancy, giving rise to abortions one year after the ewe became infected. No serological response can be detected during the 'latent' infection and there is no method of deciding whether purchased ewes are infected. Since only a few purchased ewes may be infected and abort, material may not be submitted for diagnosis and the disease is not recognized until a much greater number of ewes abort at the next lambing season.

The characteristic picture, is that the first season of infection shows itself as a few purchased ewes aborting or producing premature lambs; the next one or two seasons abortions and still births occur in all age groups and in the following seasons the abortions are mainly confined to yearlings and bought-in sheep, since the older ewes will have acquired immunity, which is dependent on

infection of membranes. Infection is, therefore, mainly spread at lambing time and the rate of infection and the development of flock immunity is usually slow.



Control of EAE (in addition to general control measures for abortion)

Aborting ewes due to EAE rarely require any treatment other than isolation until their discharges cease. In the case of an active outbreak, then treatment of in-lamb ewes with oxytetracycline may reduce losses. Contact the surgery for the most appropriate control strategy for your flock.

If chlamydial infection is already established in a flock or in an area where maintenance of a "clean" flock is unrealistic then it may be appropriate to investigate a strategy of vaccination using the vaccine CEVAC Chlamydia.

Management practices to keep to a 'clean' flock and preventing the introduction of infected animals into the flock is best achieved through the membership of the Premium Health Scheme (EAE) run by the Scottish Agricultural College (SAC) Veterinary Services or the Highlands and Islands Sheep Health Scheme (HISHA).



Even if not a member of the scheme, infection status can only be established by blood testing a proportion of the sheep within a flock. If a flock tests clear of infection then it is important to buy in replacements from a flock which has also tested negative. Importantly however, current blood tests are not sensitive enough to detect the presence of non-aborted silently infected ewes.

Toxoplasma

Toxoplasma gondii is a protozoa responsible for Toxoplasmosis. The protozoa are able to produce tissue cysts in virtually all mammals, including humans. However, its sexual cycle is only completed in cats and other Felidae, whereby it is able to produce oocysts (eggs), which are shed in faeces. Sheep become infected by ingesting the oocysts passed in these faeces. Sources of infection include contamination of stored grain or hay, or spreading manure containing cat faeces or by cats defecating on the pasture. The oocysts are very resistant and remain viable for many months in the environment.

Once ingested the protozoa is able to penetrate the small intestine and is distributed to many organs, including muscles, the brain and in pregnant ewes, the placenta. The parasite persists in the animal within tissue cysts and consumption of undercooked meat from infected food animals is a common route of transmission to people. Sheep and other animals develop a strong immunity following a primary infection which will protect against disease in subsequent pregnancy. As a result, ewes don't abort from *Toxoplasma* more than once.



So, if infection occurs outside of pregnancy, the ewe will become immune without showing any signs.

However, if ewes become infected with *Toxoplasma* for the first time during pregnancy, the parasite invades and multiplies within the placenta and then onto the foetus, therefore the consequences may be severe for the developing foetus.

The effect of the disease depends upon the stage of gestation at which infection takes place (see table).



| Oocyst ingested | Effects |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Ingested in the first 60 days of pregnancy | Fetal resorption Ewes may appear barren If ram still present, may return to the ram |
| Infection between 60 – 120 days of pregnancy | Abortion in late pregnancy – often with mummification of one or more fetuses Or one or more still born lambs Or live but weakly lambs |
| Infection after 120 days of pregnancy | An infected normal lamb which becomes immune |

Control of Toxoplasma

Vermin control – Young cats may become infected for the first time after they go hunting and eat wild rodents and birds infected with Toxoplasma. Cats can also develop immunity to Toxoplasma.

Cat faeces control - keep cats away from cereals, hay and bedding likely to be available to pregnant sheep.

After lambing, retain the aborters and introduce any bought-in replacements to the farm environment for as long as possible before tugging to that they are exposed to material likely to contain cat oocysts.

Toxovax is a licenced vaccine for the use against Toxoplasmosis and is recommended to be used at least 3 weeks prior to tugging. It is assumed that immunity is boosted by natural infection so it is usual to only vaccinate once.

See the table on the back page for more information.

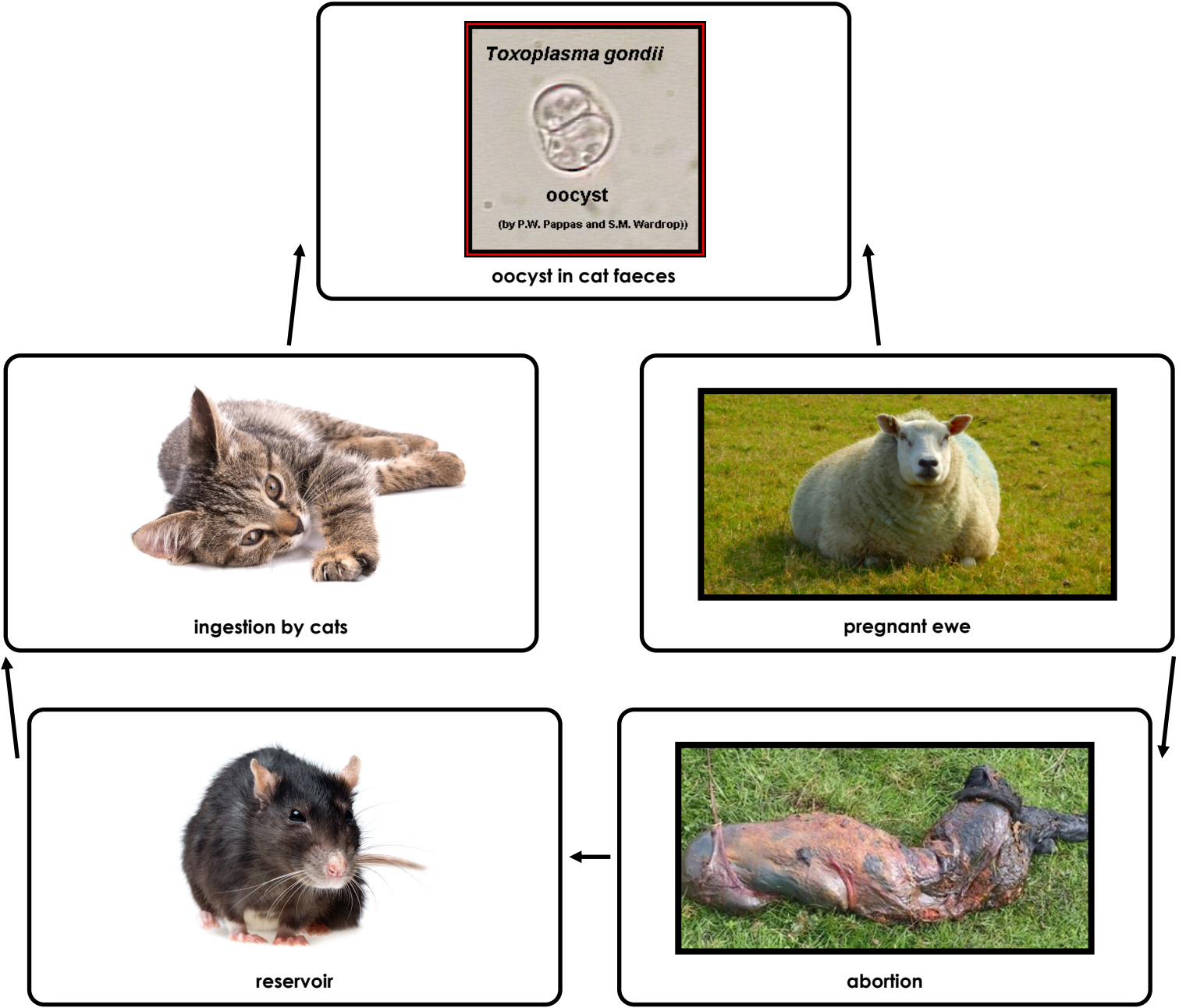
Infected ewes are not obviously ill, though they do have an increased temperature and lose appetite a few days after infection. Abortion usually occurs about 30 – 50 days after ingestion of the cat oocysts.

The aborted placenta often contains areas of white, calcified spots over the cotyledons, which resemble 'frosted strawberries' and the fetuses are often, brown, dry and mummified.

It is advised to retain ewes that have aborted due to Toxoplasma for breeding, as their immune response will protect them against disease in subsequent pregnancies.

During an outbreak of Toxoplasmosis, aborting ewes are not dangerous to other ewes. The infection is not transmitted ewe-ewe, therefore neither is the immunity. However, there is always the possibility of mixed infections, especially with *C. abortus*. Abortions and fetal membranes should be handled with disposable gloves due to the zoonotic risk

Life Cycle



| Disease | Cause | Signs | Stage of abortion | Source of infection | Ewe ill? | Vaccine |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| EAE (enzootic abortion) | <i>Chlamydomphila abortus</i> (bacteria) | Fresh lambs, Premature/weakly live lambs, | Last 2 – 3 weeks of pregnancy | Vaginal discharges from aborting ewes | Not usually | CEVAC Chlamydia |
| Toxoplasmosis | <i>Toxoplasma gondii</i> (protozoan) | Dependent upon stage of pregnancy, may see mummified lambs. 'Frosted strawberries' appearance on the placenta. | Dependent upon stage of pregnancy | Oocysts in cat faeces | May have an increased temperature and lose appetite. | Toxovax |
| Campylobacteriosis | <i>Campylobacter fetus</i> and <i>C. jejuni</i> (bacteria) | No lesions on the placenta, but the aborted lamb's liver can be affected. | Later pregnancy | Ingestion of contaminated faeces e.g from Wildlife or symptomless carrier sheep | Rarely | Not available in the UK |
| Salmonellosis | <i>Salmonella Abortus ovis</i> (now rarely reported), <i>S. Typhimurium</i> , <i>S. Dublin</i> and <i>S. Montevideo</i> (bacteria) | No obvious lesions on the placenta. If live lambs are born, these are often ill at birth and develop a fatal septicaemia or pneumonia. | Mainly in the latter half of pregnancy, although apparently barren ewes may reflect earlier fetal loss. | Symptomless carriers are found in both ewes and lambs. Disease sources include: 'foreign' slurry, bought-in sheep and other grazing stock, and birds. | Possibly at or before abortion. Some serotypes are much more pathogenic than others, resulting in severe illness, scouring, death and offensive smelling vaginal discharge for a week or more. | Only feasible and advisable for certain serotypes |

Sheep Meetings



Prelambing: 2pm on 11/01/16 at the Farm & Equine practice on Markeaton Lane
Call the practice on 01332 294929 to book your place.



Ewe Nutrition: 7:30pm on 19/01/16 at the Farm & Equine practice on Markeaton Lane
Feeding the pregnant ewe and metabolic profiling, Sponsored by Norbrook.

Call the practice on 01332 294929 to book your place.



Jennie qualified from Liverpool Vet School in July 2015 and has joined the practice as the new Intern. Her parents have a beef and sheep farm in Cheshire.

Before heading to vet school she worked as a scientist in a pathology laboratory.

Jennie enjoys all aspects of being a farm vet but is particularly looking forward to working with the sheep farmers in the area.

In her spare time she enjoys cycling, netball and walking with her scruffy border collie, Lucky.