Farm Vet News

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Figure 1. A colostrometer

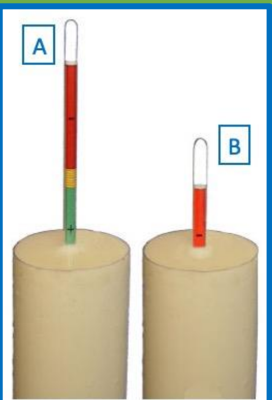


Figure 2. A) shows good quality colostrum; B) shows poor quality colostrum.

In this issue:

Effective Colostrum Management

Calves and lambs are born with a naïve immune system as antibodies in the dam's blood are unable to cross the placenta to reach the fetus. Instead their only source of antibodies comes from colostrum. Colostrum isn't just about antibodies though, as it also contains higher levels of fat and protein than milk, supporting the neonate with energy through those first few days of life.

The Four Q's

Colostrum management can be described by "The Four Q's", a set of guidelines to help maximise the success of feeding colostrum:

1. Quietly

Arguably the most important, as stress will cause a reduction in uptake of antibodies across the gut wall. Careful handling of the calf, or lamb, before and during feeding will help to keep stress levels to a minimum. Feeding neonates in view of the dam will also reduce stress further.

2. Quality

Colostrum can range in quality drastically and is affected by many different factors, such as:

- Donor age (adults generally have better quality colostrum than heifers/shearlings)
- Current disease status of dam (mastitis, hypocalcemia, etc.)
- Length of dry period in dairy cows (shorter than three weeks doesn't give enough time for good quality colostrum to be produced)
- How soon after parturition it is collected (colostrum dilutes with time)
- Hygiene at collection (bacterial contamination of colostrum will reduce the antibody concentration)

3. Quantity

The simplest target to aim for is to feed **10% of body weight**. With dairy calves, aim to stomach tube every calf that hits the ground as it is difficult to assess how much colostrum has been consumed from suckling. With sheep, triplets are going to be at a greater risk of not getting enough colostrum, so it is best to presumptively supplement these.

4. Quickly

Time is always against us, as the uptake of antibodies across the gut wall starts to decrease from birth. The gold standard would be to feed a first dose within the first two hours, however this is not always practical, and therefore aiming to feed within the first six hours is more manageable. Repeating the feed in the next six hours would be ideal as well.

Colostrum Quality & Storage

Once colostrum has been collected, it should be tested to assess quality prior to it being fed. Poor colostrum should be discarded immediately, but good quality colostrum can be stored in the fridge for 24-48 hours to be fed to other neonates that may require it. Colostrum can also be frozen and stored for around 12 months. Extra care should be taken when thawing and re-heating stored colostrum up to body temperature (around 38˚C) as overheating can damage the antibodies rendering it useless. Never use a microwave!

Testing colostrum can be undertaken very easily using a colostrometer (figure 1). Fill a measuring cylinder with room temperature colostrum; temperature can affect the reading with cold samples (e.g. taken directly from the fridge) potentially giving a lower reading. Float the colostrometer in the colostrum and, after ten minutes, take a reading in line with the top of the colostrum (figure 2); if you don't wait ten minutes, the result is likely to be higher than true which risks feeding calves with poorer colostrum. A reading within the green band signals good quality colostrum, orange as borderline, and red as poor.

Investigating Abortions

Abortions are always a stressful event, for animals and farmers alike. But what can cause animals to abort? when should we begin investigations? and how do we go about it?

What causes abortion?

There are many different causes of abortion in cattle and sheep, with infectious causes being associated most often. The top three causes of abortion in sheep include Enzootic Abortion, Toxoplasmosis and Campylobacter, with Schmallenberg virus making a dramatic appearance in recent years. For cattle, the top three causes are Schmallenberg virus, Neospora and Salmonella Dublin. See figures 4 and 5 for the percentages of diagnosed abortion causes for the last few years.

Non-infectious causes of abortion can sometimes be overlooked, due to them being more difficult to pinpoint and reach a definitive diagnosis, however they are still important to consider. Any stressful event that can cause compromise to or fever of the dam could lead to an abortion. Table 1 lists some of the more common causes of abortion for cattle and sheep.

When to investigate?

It can be uneconomic to investigate every case of abortion, however it is important to keep accurate records of when they occur and which animals they occurred to, for future reference. It is advised to start investigations when the herd/flock abortion rate reaches >3% and >2% for cattle and sheep respectively. Other factors, such as the time frame between abortions, or whether the dam is showing any signs of illness, are also important to consider and may indicate the need to begin investigations sooner - your vet will be able to advise you on this.

It is important to note that Brucellosis (caused by Brucella abortus) is a notifiable disease, and as such cattle keepers have a statutory requirement by law to report every case of abortion to the APHA. This allows for the APHA to continue statutory surveillance for Brucella as the UK has been Officially Brucellosis Free since 1985. If APHA deems testing is required, they will instruct your veterinary surgeon to collect samples from the dam and aborted fetus/placenta. The APHA will cover the vet visit, time and laboratory fees for this.

How to Investigate

Your vet will discuss your current situation with you, building a timeline of the abortions. This can help to narrow down the likely causes and allow for more specific investigations. They are likely to ask you about: age of the dam; expected calving date; date of first (and subsequent) abortions; total number of normal calvings this season; whether the animals are housed or out at grass; what ration/diet is currently been fed, and whether it has changed recently; are aborted dams/other livestock showing signs of illness; the herd health status (previous abortion history, vaccination/serological status); and any recent movements of livestock.

Your vet will then go on to collect the necessary samples to be sent off for testing, some of which can take a number of weeks for the laboratory to return. The best samples for diagnostic tests are collected as soon as possible after the abortion occurs, limiting any further decomposition of the fetus and placenta. A whole fetus (or multiples in the case of sheep) allows for samples to be collected with minimal environmental contamination. The inclusion of the placenta is crucial and increases the chances of reaching a diagnosis. Sometimes, a blood sample from the dam can be useful, as it can give an idea of what diseases she has been exposed to previously.

Table 1. Causes of Abortion

Non-Infectious	
- Trauma and stress to dam	- Plant toxicities (e.g. hemlock/cypress/juniper)
- Pyrexia	- Nitrate/nitrite poisoning
- Twins (cattle)	- Genetic mutations
- Iodine deficiency	
Infectious	
Cattle	**Sheep**
- Brucella abortus (NOTIFIABLE)	- Chlamydophila abortus (Enzootic Abortion)
- Campylobacter fetus fetus	- Campylobacter species
- Leptospira hardjio	- Salmonella species
- Arcanobacter pyogenes	- Listeria species
- Salmonella species	- Toxoplasma gondii
- Listeria monocytogenes	- Schmallenberg virus
- Bacillus licheniformis	- Border disease virus
- Bovine Viral Diarrhoea virus	- Leptospira species
- Bovine Herpes virus-1	- Exotic causes: Coxiella Burnetii (Q fever); Anaplasma Phagocytophilum; Brucella species; Bluetongue virus)
- Schmallenberg virus	- Neospora caninum (possible)
- Neospora caninum (Protozoa)	
- Fungi (e.g. Aspergillus species)	

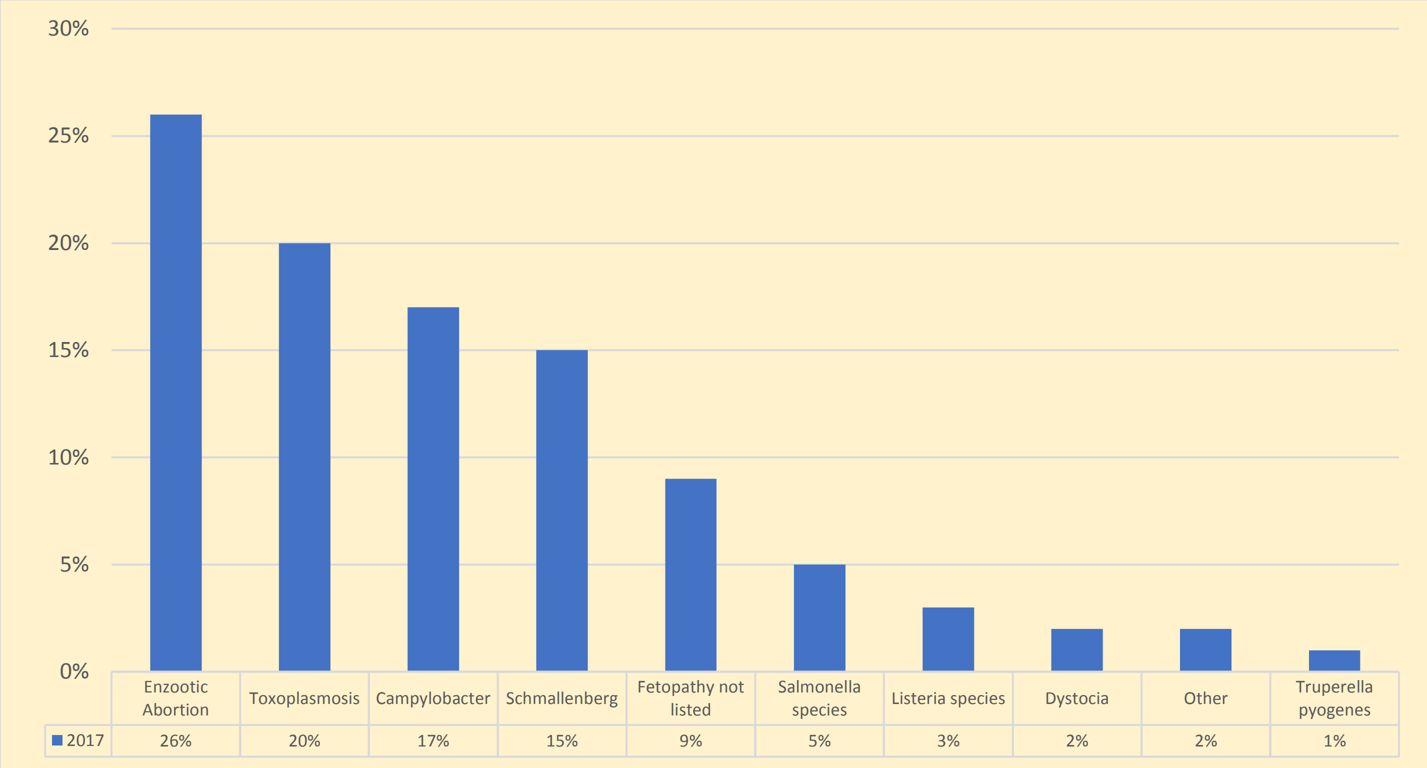
The number of abortion incidents where a definitive diagnosis is reached reportedly sits at around 35% when all necessary samples are available. Where samples are missing, i.e. the placenta, this percentage sits even lower.

A delay is sometimes seen between dams becoming infected and abortion occurring. Fetal death can occur at different times along this timeline too. This is why some aborted material can look fresh, whilst decomposition will already have begun in others. This can make it difficult to ascertain exactly when the infectious agent was introduced.

Table 2. What Samples Will My Vet Want?

Post Mortem Examination Samples Required	Testing for
- Section of placenta with cotyledons	Bacterial culture
- Fetal stomach fluid (aseptically collected)	Bacterial culture
- Fetal liver/lung	Bacterial culture
- Fetal thoracic fluid	Neospora/BVD (Cattle)
- Section of thymus	BVD (Cattle)
- Both thyroid glands	Iodine deficiency
- Section of kidney	Leptospirosis
- Section of spleen	
- Section of heart septum	Neospora (Cattle)
- Whole brain (or just brain stem)	Schmallenberg virus/Listeria

Figure 4. Diagnosis of Ovine Fetopathy in 2017 [VIDA 2018]



	Enzootic Abortion	Toxoplasmosis	Campylobacter	Schmallenberg	Fetopathy not listed	Salmonella species	Listeria species	Dystocia	Other	Truperella pyogenes
2017	26%	20%	17%	15%	9%	5%	3%	2%	2%	1%

N.B. Cases of fetopathy where a diagnosis was not reached were excluded from the total; "Other" includes Fungal causes, Yersinia species and Bacillus licheniformis.

Figure 5. Top 10 Bovine Abortion Diagnoses in GB (2016 & 17) [VIDA 2018]

	Schmallenburg	Neospora	Bacillus licheniformis	Abortion - other cause*	Trueperella pyogenes	Salmonella Dublin	Fungi	BVD	Listeria spp	E. coli	Campylobacter
2016	0	22%	14%	14%	13%	13%	8%	5%	5%	3%	3%
2017	19%	14%	12%	13%	10%	14%	6%	5%	4%	3%	0

*Other cause - Abortion diagnoses recorded in VIDA that do not have a specific named cause.

References:

- Veterinary Investigation Diagnosis Analysis (VIDA) - Annual Report 2017 (Sep 2018)
- Bovine abortion: Aetiology and investigations - Emma Cabell, In Practice 2007 29: 455-463
- Abortion in sheep 1. Investigation and principal causes - Rebecca Mearns, In Practice 2007 29: 40-46
- Abortion in sheep 2. Other common and exotic causes - Rebecca Mearns, In Practice 2007 29: 83-90

Babesiosis (Red Water Fever)

Babesiosis is caused by the blood parasite Babesia divergens. Cattle become infected with Babesia when they are bitten by an (or several) infected Ixodes ricinus tick(s), which serves as the host.

The disease is commonly seen in naïve adult cattle populations which are usually bought in from low risk areas or turned out from housing without previous exposure. Calves up to nine months old are not susceptible to Babesiosis, providing they have received adequate colostrum. This opens up a window where exposure to infected ticks during this period allows immunity to develop without the risk of clinical disease.

Clinical Signs

- Pyrexia
- Pale to yellow mucus membranes (Anaemic and or Icteric)
- Increased heart rate and respiratory rate
- Red blood-tinged urine (Haemoglobinuria)
- Abortion
- Death
- Chronic disease can also be seen. These animals will be moderately to severely emaciated, with a reduction in milk production.

Diagnosis

Diagnosis is usually possible from clinical signs or post mortem examination findings, especially in endemic areas where the disease is suspected or has been previously diagnosed. To confirm the disease, a blood smear can be examined at a laboratory to identify the Babesia parasite in the red blood cells (see figure 6).

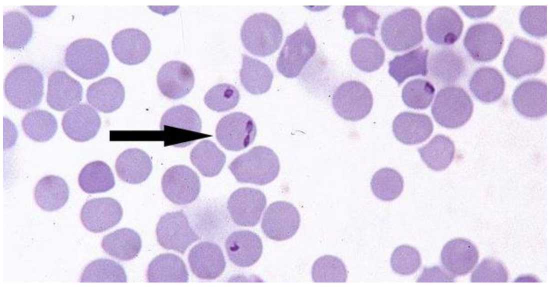


Figure 6. Arrow points to Babesia divergens parasite within red blood cell

Treatment

Imizol is the only licensed treatment for Babesiosis (see figure 7). There are two licensed dose rates; one for treatment of clinical disease and one for prevention for animals in high risk areas.

Other supportive therapies for sick or down cattle, such as fluid therapy, anti-inflammatories, access to palatable feed and water, turning and lifting, are also required. In severe cases a blood transfusion may be required to replace damaged red blood cells (see figures 8 and 9).

Prevention

Targeted ectoparasite treatment against ticks is important, however consider timings of treatments to allow young cattle to be exposed and develop sufficient immunity. Discuss with your vet if you think you are in a high-risk area.

Outcome

Prognosis varies depending on how quickly treatment is initiated. Naïve groups of adult cattle can have quite high mortality rates, even when treatment has been administered.

Figure 8. Blood collection from a donor cow

Figure 9. Blood administration to the patient

Figure 7. Imizol (Imidocarb) - Drug label

PLEASE READ DATASHEET PRIOR TO USE!

Owner MUST notify the **DVM/RVL** when **treated animals** are to be **SLAUGHTERED** or their **MILK** is to be **used for human consumption.**

WITHDRAWAL PERIOD
213 days meat
504 hours (21 days) **milk.**

ROUTE AND RATE
Must **NOT** been given **IV/IM.**
Repeat doses must **NOT** been given.

OTHER PRECAUTIONS
Wear **GLOVES** - wash off any skin/eye splashes **immediately.**

Pregnancy Toxaemia (Twin Lamb Disease)

During the third trimester of gestation when energy demand is at its highest, ewes can develop pregnancy toxaemia due to an imbalance between nutrition and energy demand. When available feed is in limited supply, the ewe will start to metabolize fat reserves to provide extra energy. Because of this, she develops a state of ketosis, where sufficient glucose is not present for normal body maintenance and fetal growth.

Risk Factors

Risk factors for disease development include:

- older ewes
- ewes in poorer body condition
- ewes with concurrent illness
- poor quality or shortage in feed
- ewes carrying two or more lambs
- stressful events, such as handling, housing and severe weather

Clinical Signs

Initial clinical signs of early disease can involve ewes who seem dull and depressed, they may isolate themselves from the rest of the flock and usually do not come up to feed. Neurological signs including head pressing and blindness swiftly lead on to recumbency, as the ewe becomes weaker. Nystagmus, an involuntary side-to-side movement of the eyes is also commonly seen.

Death follows promptly in untreated cases, and the prognosis of treated cases, even when intervention is started in the early stages, is poor.

Treatment of Individuals

Treatment regimens are likely to include some or all of the following:

- ad lib good quality silage and fresh water
- IV glucose (a short-term boost)
- drenching with propylene glycol, to supply the glucose pathway for energy

In severe cases, it may be required to induce lambing to save the ewe - your vet will be able to discuss this with you in further detail.

Continued monitoring over the next few days, to assess response to treatment will help to improve the prognosis. It is also advisable to separate these individuals from the flock to reduce stress from competition for feed.

Expulsion of fetuses is commonly seen and is the body's way of self-preservation. In these cases, or during parturition, extra assistance may be required, as the ewe may be to too weak to manage by herself.

Some ewes will go on to develop "wool slip" over the next four to six weeks post lambing, as a response to the stressful event.

Prevention

Preventing or reducing the risks is all about providing enough feed and keeping stress to a minimum. Scanning ewes gives a much clearer picture of energy requirements and allows for a better tailored nutritional plan. Regular body condition scoring can be used to ensure that feeding is on track, combined with metabolic profiling for flock wide monitoring. An appropriate cull and replacement policy should be in place to help to remove problematic high-risk ewes.

Figure 9. Metabolic Profiling

To monitor energy levels within a flock, blood samples from a representative proportion of each group can be collected to measure the level of blood beta-hydroxy butyrate (BOHB). Where this value is elevated, ewes will have a poorer energy balance and so are at a greater risk of developing pregnancy toxaemia.

Speak to your vet if you are interested in monitoring the energy level of your flock.