Lambing season: identifying risks to newborn lambs – and how best to prevent them

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The neonatal period is the most vulnerable time in the life of a lamb, with almost half of all pre-weaning mortalities occurring on the day of birth (Dwyer, 2008). Here, the author identifies the most significant risks to newborn lambs, as well as the key areas where preventive strategies can be put in place to reduce those risks.

With the lambing season in full swing, this is a good time to consider how we, as advisors to the farming community, can target our advice to help flocks to reduce neonatal lamb losses.

Hypothermia and hypoglycaemia

Hypothermia (low body temperature) and hypoglycaemia (low blood glucose) are the most common causes of death in newborn lambs. These two conditions are interlinked in that a low body temperature will result in a lamb being unable to feed and thus result in low blood glucose. The low blood glucose means there is no energy available to maintain body temperature, thus perpetuating the hypothermia.

All lambs are born with a finite quantity of brown fat within their bodies. This brown fat is unique to newborn mammals and is used by the lambs in the first few hours of life to keep warm. This is a protective mechanism that forms a stopgap between birth and the time when the lamb is able to feed.

Any lambs that do not feed within the first few hours after birth will soon run out of energy reserves to keep warm, and will die very rapidly if there is no intervention – no matter what environment they are born into. Indeed, hypothermia can account for nearly half of all perinatal lamb losses (Houston and Maddox, 1974).

In general, sheep are particularly resistant to cold weather, and even newborn lambs can maintain body temperature at temperatures below freezing – as long as they are dry and well nourished (McCutcheon et al, 1983).

Lambs do, however, lose heat quickly when wet, especially in cold and windy weather (McCutcheon et al, 1983). Lambs that are born outside in poor weather conditions will, therefore, clearly be at increased risk of hypothermia and hypoglycaemia compared to those lambs born into a warm indoor environment. Outdoor lambing flocks should, therefore, be advised to provide some areas of shelter within their lambing paddocks. Even using straw bales as windbreaks can make the difference between life and death to young lambs. With an indoor lambing system, it is important to ensure the lambing pens are free from draughts.

Equally important is the recognition that any factors relating to either the ewe or the lamb that prevent the lamb from feeding within the first few hours of life will put that lamb's life at risk.

Mothering instinct in the ewe clearly plays an important part in whether a lamb survives those first few hours and days. Litter size is a contributing factor in this, with almost half of deaths of twins being attributed to starvation (Nowak et al, 2000).

In singles, however, starvation accounts for only one quarter of lamb deaths, with these more likely to die on the day of birth from complications arising from birth (Haughey, 1993).

Mortality is also higher in the offspring of primiparous ewes (first-time mothers; Morris at al, 2000).

Identifying those groups of animals that may have poor mothering abilities (first-time mothers, for example, or those with multiple offspring) will allow more effective targeting of labour around lambing time, thus, ensuring any lambs that have failed to suckle in the first few hours of life can be assisted or fed with a stomach tube. A diligent stockman, stomach tubes and a ready supply of stored or artificial colostrum are essential parts of any lambing kit.

Other factors that will reduce the intake of colostrum by the lamb include birth stress due to dystocia or diseases such as Border disease, which can result in the birth of weak, depressed lambs. A difficult lambing can also lead to the delivery of an injured lamb – such animals are less vigorous, slower to suck and may establish a weak relationship with their mother (Dwyer, 2008).

Maternal condition and nutrition before and during pregnancy can affect growth of the foetal lamb (Robinson et al, 1999; Greenwood and Bell, 2002), and has been implicated in poor lamb vigour at birth (Dywer, 2003; Dwyer at al, 2005).

A lamb that is slow to suck after birth may be less able to recognise its own mother and more likely to miss sucking opportunities. Sucking plays an important role in the development of recognition of the ewe by the lamb, as well as providing nutrients and fuel for maintenance and homeothermy (the ability to maintain normal body temperature; Nowak et al, 1997; Goursand and Nowak, 1999). Poor ewe nutrition in the weeks running up to lambing will also result in the production of poor quality and reduced quantities of colostrum. Equally, having a ewe that is sick, affected by mastitis or unable to stand will mean that even the most vigorous of lambs will fail to feed.

Prevention of these problems is achieved by ensuring good lambing management, with rapid treatment of sick ewes, and adequate ewe nutrition in the pre-lambing period.

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Escherichia coli septicaemia

(also known as "watery mouth" or "rattle belly")

E coli is a bacterium that is carried in the guts of normal sheep and, therefore, will be found in all environments where sheep (and other farm animals) are present.

E coli is passed in sheep faeces and contaminates the environment, as well as the teats, of the ewe. The bacteria are then ingested by the newborn lambs as they search around for the ewe's udder soon after birth. As stocking density increases, the number of bacteria within the environment also increases and, therefore, so do the risks of infection in the lambs.

Since antibodies do not pass over the ovine placenta, newborn lambs are immunologically naïve at birth and, therefore, are extremely vulnerable to infection until adequate colostrum has been ingested.

Lambs that have not received adequate colostrum (50ml/kg

Figure 1 (left). Losses such as these at lambing time can be avoided by good preparation, diligence and hygiene

Figure 2 (right). Navels should be dipped in strong iodine solution to prevent disease introduction

Figure 3. Good hygiene in the lambing environment, particularly the individual pens, is key to lamb survival

within the first hour of life), for whatever reason (see previously), are at increased risk of disease.

The bacteria multiply within the lamb, releasing toxins that result in a rapidly developing endotoxaemia and, in later stages, a bacteraemia. Lambs will be affected between one and three days after birth, and appear dull and depressed with wetness around the mouth and a fluid-filled, distended abdomen. This disease is rapidly fatal and treatment is often unsuccessful if the signs are not detected early. For this reason, a strategy to prevent the occurrence of watery mouth is of vital importance. Inevitably, indoor lambing systems face greater risks from infectious disease (Binns et al, 2002).

Ensuring lambs receive adequate high-quality colostrum within the first hour of birth, along with good hygiene in the lambing environment – particularly the individual pens – are the two most important preventive strategies.

Oral antibiotics are available from a veterinary surgeon and can be given prophylactically to high-risk newborn lambs in flocks where disease outbreaks occur. High-risk lambs would include lambs from multiple births, as well as lambs born later in the lambing season when the bacterial load has built up significantly in the environment.

Also at higher risk are those lambs born to ewes that are sick or poor mothers, as well as lambs that have been affected by birth stress or disease. I would stress at this point, however, that it is not considered good practice for routine antibiotic treatment to be given to all lambs at birth, and, indeed, it should not be necessary. This is a disease predominantly of poor hygiene and management, and is – in the most part – preventable by improving these two things.

Escherichia coli enteritis

A less-common strain of *E coli* bacteria that attaches to, and damages, the intestines of very young lambs is seen in some flocks. Lambs will present with severe, watery diarrhoea and die rapidly of dehydration, if untreated. Again, prevention is based on good hygiene and early colostrum intake.

Lamb dysentery

Lamb dysentery is a fatal disease of newborn and young lambs caused by the bacterium *Clostridium perfringens* type-B. This bacteria most commonly causes sudden death in well-fed, typically single, lambs in the first week of life, although it can also cause disease in slightly older lambs.

Prevention of this disease is achieved by vaccinating the ewes with a multivalent clostridial vaccine. This ensures there are antibodies against the bacterium in the colostrum of the ewe, which is then taken in by the lamb at its first feed – so called passive transfer of immunity.

The most common vaccination protocol involves injecting the ewe with two doses of vaccine four-to-six weeks apart, as an initial course, usually as a ewe lamb, followed by an annual booster dose four-to-six weeks pre-lambing. Clearly, this relies on the ability of the ewe to produce adequate colostrum, as well as the ability of the lamb to receive it, to prevent disease.

Neonatal bacteraemia

As previously discussed, the environment into which a lamb is born is laden with bacteria. Any lamb that has not received adequate colostrum, or is born into a particularly contaminated environment, will be more susceptible to opportunistic invasion by these bacteria.

There are multiple points of entry for bacteria in the newborn lamb, and often this, along with the species of bacteria invading, will dictate which of the following diseases is seen:

- **Navel ill**

In the case of navel ill, the bacteria enter the body via the untreated navel, resulting in a swollen, painful navel with infection that tracks sometimes deep into the abdomen. Fast and effective antibiotic therapy is required to effect a cure.

- **Joint ill**

This disease is seen when the bacterial infection is localised to the joints, resulting in painful swellings and subsequent lameness. Again, a prolonged course of antibiotic treatment is necessary, and even then the lamb is likely to be left with arthritic change in the joints that may lead to long-term lameness and poor performance.

- **Spinal abscesses**

In this case, the bacteria have usually entered the body through contamination of a docking or castration wound.

The bacteria are carried by the bloodstream to the spine, where they are deposited and result in the formation of an abscess. As the abscess enlarges, it presses on the spinal cord, resulting in paralysis. Treatment in these cases is usually unsuccessful.

- **Meningitis**

With meningitis, bacteria usually enter the body via the gut or lungs and travel in the blood stream to set up an infection and inflammation in the brain and surrounding tissues. As already mentioned, treatment with antibiotics is necessary and comes with a guarded prognosis.

As you can see, once infection is established, treatment of neonatal bacteraemias becomes difficult, and is often unsuccessful. Prevention of disease is, therefore, essential and is achieved by farms taking the following advice:

- Dipping navels at birth with strong iodine solution.
- Good hygiene within the lambing pens.
- Sufficient colostrum intake within the first few hours of birth (ideally 50ml/kg within the first hour).
- Good hygiene practices when tail docking and castrating young lambs.
- Good stockmanship to detect diseases in the early stages.
- Correct stocking density within lambing sheds or paddocks to reduce environmental bacterial load.
- Ensuring ewes are clean pre-lambing by using adequate bedding and dagging dirty tails.
- Good pre-lambing ewe nutritional management.

Misadventure

Most flocks will have experienced death of lambs by misadventure at some point. Foxes, dogs, vehicles and water troughs can all prove dangerous to young inquisitive lambs. Such losses are difficult to prevent, but again good stockmanship is of paramount importance.

Summary

The management of the pregnant ewe (including nutrition and pre-lambing clostridial vaccination) and the provision of an adequate birth environment are important components for lamb survival. Diligent stockmanship that ensures all lambs are warm, dry and receive adequate colostrum within the first few hours of birth will result in a reduction in the number of lambs lost in the perinatal period.

Finally, it may seem an obvious point to make, but all flocks are different – not only in their management strategies, but also in their breed make up and production aims.

For this reason, there can never be a "one size fits all" approach to our flock health advice. It is important to remember at all times that advice to shepherds should be tailored to their individual needs, and that any information given is relevant to their own flock.

TOP TIPS
for a successful lambing

- **Be prepared –** ensure the ewes have been fed correctly and vaccinated at the correct times pre-lambing. Farms need to ensure all necessary equipment is ready several weeks before lambing is due to start.
- **Be diligent –** every ewe should be checked for milk at lambing, and potential problems in both lamb and ewe should be identified before they occur.
- **Be clean –** lambing pens should be kept clean and disinfected, and strict hygiene practices employed by those assisting with lambing or carrying out docking and castration.

> "There can never be a 'one size fits all' approach to our flock health advice. It is important that advice to shepherds should be tailored to their individual needs... and relevant to their own flock."

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