



Managing Perinatal Mortality in Lambs

David Fernandez
Extension Livestock
Specialist

What Is Perinatal Mortality?

The time period from a few weeks before lambing until about four weeks after lambing is referred to as the perinatal period. Perinatal mortality includes late-term abortions, losses at birth and losses during the first month after birth. Between 10 and 30 percent of lambs die before weaning, with most producers averaging between 10 and 20 percent lost annually.

The most dangerous time in a lamb's life is its first week. In several studies involving a variety of different wool sheep breeds, about one-third of all lamb deaths happened during the first 24 hours. Another one-third of lambs were stillborn. This means about two-thirds of all perinatal lamb deaths occur before your lamb is 24 hours old. Another 18 percent of perinatal deaths occur by the eighth day of life. In other words, more than eight out of every ten lamb deaths occur before your lambs are eight days old.

Perinatal deaths are likely to be one of the greatest sources of economic loss on your sheep farm. The economic cost of perinatal mortality includes the cost of feeding and maintaining your ewe throughout her pregnancy, veterinary expenses and lost revenue due to the loss of your lambs. Many of the causes of perinatal mortality are the result of

management decisions. By making a few simple changes to your management system, you may be able to reduce early lamb losses on your farm.

Abortion/Stillborn Lambs

Abortions and stillborn lambs are usually caused by an infection like toxoplasmosis, vibriosis, chlamydiosis or leptospirosis. Lambs may also be born weak and die shortly after birth as a result of these infections. Infections are often a result of poor farm hygiene or poor biosecurity.

- Barn cats are carriers of toxoplasmosis and can pass it along to ewes when they defecate in feed or hay.
- Vibriosis may be carried by rodents or birds, so keeping them out of your feed is an important step in reducing infections. Remember to quarantine new animals you bring to your farm because vibriosis is often introduced to farms by a new herd mate. Hygiene is critical in preventing outbreaks and stopping the spread of the disease once ewes become infected.
- Chlamydiosis is passed to other animals in the fluids and membranes from aborted fetuses or the vaginal discharge from an infected ewe. Older ewes that have been exposed to chlamydia

are immune, but ewe lambs and yearling ewes can become infected and abort. In a flock that has not been exposed to chlamydia before, older ewes can also have high abortion rates. The bacterium that causes chlamydiosis in sheep is not the same as the one found in cattle, so the cattle vaccine is not effective in controlling chlamydiosis in sheep.

- Leptospirosis is normally found in several species of wildlife including raccoons and skunks as well as dogs, cattle and pigs. Sheep are not usually troubled by leptospirosis. The bacteria are transmitted in contaminated water. Flooding, heavy rains and warm, humid weather increase the likelihood of transmission.

If an abortion has occurred, remove aborted fetuses and their membranes from the pasture or lambing pen to prevent other animals from becoming infected. Because many of the abortion-causing diseases of sheep are transmissible to humans, be sure to wear gloves and wash thoroughly after handling any aborted fetuses or contaminated materials. ***If you are pregnant or think you might be, DO NOT handle aborted fetuses or fetal membranes.*** You should take samples of fetal membranes and the fetus itself to a diagnostic laboratory as soon as possible. You can often treat abortion-causing diseases with tetracycline antibiotics, but proper diagnosis is needed to make sure the antibiotic will be effective.

Keep your pets, birds, rodents and other wildlife out of your feed and feed storage areas. Keep your water tanks and troughs clean. You can vaccinate your sheep for chlamydiosis and vibriosis, but there is no approved vaccine for toxoplasmosis for sheep.

Another reason for a high number of stillborns might be pregnancy toxemia, also called ketosis. Ketosis is caused by inadequate energy intake during the last trimester of pregnancy. It is especially a problem in over-conditioned ewes, but is also seen in thin ewes. Ewes stop eating and become lethargic. Eventually they go down and will not rise. Treatment involves providing readily digestible sugars in a drench. Propylene glycol, molasses or a syrup made of table sugar (1 cup sugar:1 cup water) can provide enough energy to correct the problem if it is caught early. Give 2 to 3 ounces of propylene glycol or up to 8 ounces of molasses or sugar syrup every four to six hours until she begins eating again. Once your ewe goes down, recovery is doubtful.

Birth Weight

Birth weight appears to be the single most important factor in perinatal mortality. Lambs that weigh between 7.5 and 11 pounds have higher

survival rates through the first eight days of life. These “average-weight” lambs have enough energy to maintain their body heat and get up to suckle quickly. They also have lower losses from respiratory diseases. Lambs that weigh less than 7 pounds are more likely to die than average-weight lambs. Light-weight lambs usually die of starvation or hypothermia. Lambs over 13 pounds are more likely to suffer from dystocia and fatal injuries at birth.

The last trimester is when most fetal growth occurs in sheep. Your ewes’ nutritional needs are nearly double during this period. Some producers attempt to keep birth weight down by reducing the amount of feed they provide their ewes during the last trimester of pregnancy. However, this strategy is more likely to cause ewe and fetal losses from ketosis than to prevent problems at birth. If your ewes do not receive enough nutrition during the third trimester of pregnancy, they are likely to have more trouble giving birth and produce less and lower quality colostrum.

Instead of withholding feed, you should consider selecting ewes that give birth to average-sized lambs and rams that sire lambs with average birth weights but high growth rates to weaning. You can help small lambs by keeping them warm and dry. Make sure that they get up and suckle soon after birth. Exposure leading to hypothermia can be a major source of loss during extremely cold or wet weather.

Sex

Ram lambs are more likely to die between birth and eight days of age than ewe lambs. Ram lambs also have a higher risk of respiratory mortality after the first week of life. While there is not much you can do about which sex of lamb you get, you can keep a more watchful eye on your ram lambs during the first few weeks of their lives to improve their survival rate.

Litter Size

We all want ewes to give birth to more than one lamb each year. Multiple births result in more lambs to sell at weaning, or so we hope. However, lambs from larger litters have lower survival rates, especially during the first eight days of life. In one study, only 57 percent of lambs from triplet or higher births survived their first week of life. Lambs from large litters require more time to stand up and nurse than lambs from single and twin births. They also tend to be smaller and lighter, so they have lower energy reserves to help keep them warm. Lambs from larger litters often receive less colostrum than lambs from single and twin births because of competition for a limited supply.

You should keep lambs from large litters warm until they can control their own body temperature. You should also make sure they get enough colostrum. You may have to collect colostrum from other ewes with single or twin lambs, ewes that have lost their lambs, or purchase packaged colostrum to provide enough to your triplet and higher litter size lambs. If you have access to an ultrasound machine and know which ewes are carrying large litters, you can separate them from the rest of the flock so you can provide them additional feed. This will ensure additional fetal growth before birth which will increase the lambs' chances of survival.

Birth Trauma/Dystocia/Labor

Your ewes will normally deliver their lambs in about 30 minutes. Ewes that have prolonged or difficult births are more likely to lose their lambs. Difficult birth, or dystocia, is one of the leading causes of perinatal lamb mortality. In one study, lambs that underwent a difficult birth had death rates that were over four times higher than lambs that were born easily. Death rates for lambs that undergo a difficult birth hover around 10 percent. Ewes that undergo dystocia are more likely to reject their lambs.

Lambs that undergo a difficult birth do not stand or nurse as quickly as lambs that are born easily. They take longer to dry because the ewe does not groom them as quickly or for as long. These lambs have slightly lower metabolic rates. They get less nutrition because they take longer to get up and nurse and ewes do not allow them to suckle for as long. Together these disadvantages combine to make it harder for these lambs to maintain their body temperatures.

You need to be prepared to assist ewes that have dystocia. Ewes that are not accustomed to being handled can suffer from additional stress when you attempt to assist them with lambing. After the lambs are born, you should leave them undisturbed for at least six hours so they can recover and bond. On the other hand, ewes that are used to being handled appear to be better off when you assist. They appear to relax once help arrives.

Despite the need to assist your ewe when she is having dystocia, if you do not do it correctly you can injure the lamb so badly it will not survive or you may kill it outright. You will need to have plenty of lubricant on hand, latex gloves and a lamb snare. Lubricate the ewe's birth canal as thoroughly as you can. Gently feel the fetus to see if it is correctly positioned to be born. If its head or a leg is bent back, you will have to gently but firmly push the lamb backwards until you can carefully reposition the lamb

correctly. Place the snare carefully over the head and forefeet of the lamb and gently pull as the ewe pushes. Hold the lamb in place as the ewe relaxes between contractions. This will allow the birth canal to slide back along the lamb's body. You must be very careful to avoid breaking the lamb's legs. A lamb's bones are still largely made of cartilage rather than bone, and they are very easy to break. If you must assist a lamb being born rear hooves first, you must be careful to avoid pulling too hard. You can fracture most of the ribs, making it difficult or impossible for the lamb to breathe. You can also rupture the liver, causing the lamb to bleed out very rapidly internally.

Factors Associated With Dystocia

While there is little you can do about some factors that cause dystocia, there are a number of factors you can manage to prevent dystocia.

- **Sex** – Male lambs suffer from dystocia more frequently than female lambs. This factor is not related to birth weight even though male lambs usually weigh more than female lambs. Male lambs appear to suffer from incorrect positioning more often than female lambs.
- **Birth weight** – Lambs with higher birth weights tend to suffer from dystocia more frequently. Lambs over 13 pounds tend to have more dystocia than lighter lambs. High birth weight lambs are more likely to be incorrectly positioned for birth as well.
- **Failure of the fetal membrane to break** – Almost 6 percent of lambs in one study died because the amniotic sac did not break.
- **Mating small-framed ewes to large-framed rams** – Large, blocky lambs have more trouble being born.
- **Mating ewe lambs too early** – Ewes bred before they reach 65 percent of mature size often fail to grow large enough to deliver lambs easily.
- **Poor nutrition** – Ewes that do not get enough energy in their diet may become exhausted before lambs are born. Low calcium in the diet can reduce the strength and duration of contractions during labor.

Dam Age/Parity

First-parity ewes, also called primiparous ewes, are ewes lambing for the first time. Lambs from first-parity ewes are less likely to survive than lambs from second-parity or older ewes. Primiparous ewes have lambs that take longer to stand and nurse. Lambs from first-parity ewes are also more likely to suffer

from respiratory infections. Ewes older than 6 years of age also have higher lamb losses.

There is little you can do to change the age of your ewes. Some producers delay breeding ewes until they are 18 months old or older. This option may not be economical for most breeders. Instead, you can separate your first-parity ewes before lambing so you can keep a closer eye on them as they give birth and begin caring for their lambs. You may also want to provide supplemental feed to help your first-parity ewes continue to grow while they are pregnant, especially during the last trimester.

Nutrition

A good nutrition program is one of the best ways to avoid perinatal mortality problems on your farm. A poor nutrition program will cause problems of its own as well as make other problems worse. Ewes that receive inadequate nutrition during the last trimester of pregnancy:

- Produce light-weight lambs that are more likely to die.
- Give birth to weak lambs.
- Have lambs that get up and nurse late.
- Produce less colostrum and less milk.
- Produce low-quality colostrum.
- Take longer to begin grooming their lambs.
- Spend less time grooming their lambs.
- Are more aggressive with their lambs.
- Are more likely to abandon their lambs.
- Are more likely to abort.
- Die themselves before they give birth due to ketosis.

Ewes should be in body condition score 2.5 to 3 on a 5-point scale (5 or 6 on the 9-point scale) when they lamb. For more information, see *Body Condition Scoring of Sheep* (<http://www.uaex.uada.edu/publications/PDF/FSA-9610.pdf>) and *Feeding Ewes to Maximize Reproductive Success* (<http://www.uaex.uada.edu/publications/PDF/FSA-9611.pdf>).

Trace minerals may play a role in perinatal survival. Arkansas soils are deficient in copper and selenium. Ewes grazing copper-deficient pastures give birth to lambs that suffer from enzootic neonatal

ataxia. The myelin around the motor neurons fails to grow properly, so the muscles do not receive sufficient nerve stimulation for movement. Lambs born to ewes that do not get enough selenium can suffer from white muscle disease and may have a lower metabolic rate, making it harder for them to maintain their body temperatures.

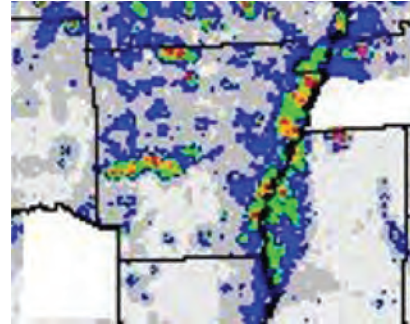


Figure 1. Copper levels in Arkansas soils are low in the blue- and grey-shaded areas.

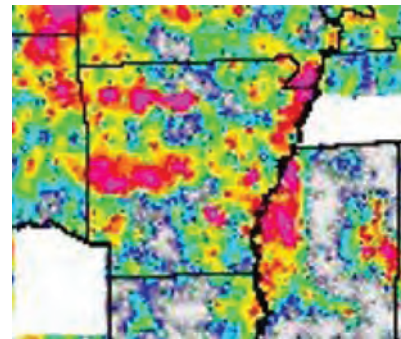


Figure 2. Selenium levels in Arkansas soils are adequate to high only in the red- and pink-shaded areas.

Dam Behavior

Anyone who has been around sheep for any length of time can tell you that some ewes are better mothers than others. Maternal behavior can have a significant impact on lamb survival. Maternal behavior also appears to be consistent from one lambing to the next. If a ewe is a good mother the first time she lambs, she will probably be a good mother for the rest of her life.

Mothering is a learned behavior to a certain extent, and your first-parity ewes will get better at caring for their lambs as they mature. However, poor mothers tend to remain poor mothers even though they may improve from the first to the second lambing. They will not likely ever become good mothers and should be culled from your flock.

Mothering behavior is most evident during the first few hours after lambing. The ewe will emit low frequency bleats and spend plenty of time grooming and drying her lambs. This is also the period of time

when she will learn to recognize her lambs, so it is best if the ewe and her lambs are not disturbed while they bond. If ewes are crowded by high stocking rates, the bond may be weak because the ewe cannot escape the rest of the flock. Mismothering and lamb stealing can be a problem when stocking density is too high.

Calm ewes spend more time grooming and bleating toward their lambs than high-strung ewes, and lamb survival is higher for calm ewes. Ewes that have dystocia spend less time grooming and bonding with their lambs and are more likely to reject the lambs. In fact, lamb mortality is nearly five times higher for ewes with dystocia than ewes with labor that lasts half an hour or less. Handle your ewes gently and be ready to assist with lambing if your ewe is having trouble after about 30 minutes.

Lamb Behavior

Not only does the behavior of your ewes make a difference in lamb survival, but the behavior of your lambs is important as well. Normally, lambs get up and begin nursing very quickly. Some will be up and eating in just a few minutes, but most will need about a half an hour to get up and another 30 to 90 minutes to start nursing. Lambs complete bonding to their mothers over the course of their first day of life, and it is usually complete after 12 to 24 hours. The closer they can be to their mothers and the more often they can nurse, the better their survival rates become.

Lambs from primiparous ewes or that suffered from dystocia will take a little longer to stand and nurse. They do not dry as quickly either, because they usually get less care from their mother. The reduced care from the mother combined with weaker survival behaviors from the lambs contributes to the five times higher death rate of lambs from difficult births.

There are many other factors that contribute to lamb behavior shortly after birth. Some of the factors are genetic. Breed, sex of the lamb and the lamb's sire all affect lamb behavior. For example, lambs from more "primitive" breeds that have undergone less intense selection for production traits and have been more subject to nature's whims, get up and nurse sooner. Males require more time to progress through lamb survival behaviors than female lambs. Light-weight lambs and lambs from larger litters also require more time to stand and nurse. Underfed ewes, especially during the last trimester of pregnancy, give birth to lambs that take longer to rise and nurse.

Congenital Defects

Congenital means something that is present before birth. Congenital defects are defects that happen while the lamb is developing in the uterus of the ewe. When the lamb is born, the defect may be lethal or cause such difficulty with birth or normal function after birth that the lamb dies. Most commonly, lambs have jaw defects that make nursing or eating difficult. Heart and lung abnormalities, spider lamb syndrome and *atresia ani*, in which the anus either does not form or is misplaced, are other common congenital defects. Congenital defects can be genetic, but they can also be caused by toxins in certain plants or improper tissue development during fetal life. Death after the first 24 hours tends to be due to congenital defects of the gastrointestinal tract.

Summary

Perinatal mortality can be one of the greatest sources of financial loss on your farm. There are many causes of perinatal mortality, but small changes in your farm's management can greatly reduce your losses. You should keep pets and wildlife out of your feed and water. Keep a close watch on lambs that have higher risk of perinatal deaths like ram lambs, underweight lambs, lambs from first-parity ewes and lambs from difficult or prolonged births. Manage your ewes' nutrition so that their needs are met and they lamb in good body condition. Select rams whose lambs are robust and lively. Finally, select calm ewes that are good mothers who easily give birth to average-weight, twin lambs. Your lamb losses will decline and your profits will rise with less worry and labor on your part.

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DR. DAVID FERNANDEZ is Extension livestock specialist with the 1890 Cooperative Extension Program and is located at the University of Arkansas at Pine Bluff.

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