

KEYS TO SUCCESSFUL LAMBING SEASON

Dr. W. Dee Whittier
Department of Large Animal Clinical Sciences
VA-MD Regional College of Veterinary Medicine
Virginia Tech, Blacksburg, VA 24061-0442

Lamb Starvation

Lamb starvation, the number one killer of lambs, often is associated with lack of shepherding. Contributing causes are:

- The lamb doesn't get started (gets no colostrum). Seventy-five percent of lambs that don't get colostrum die for one reason or another.
- The ewe won't claim the lamb.
- Mastitis.
- The teat is too big or is too near the ground and the lamb doesn't find it.
- Sore mouth.
- The ewe can't feed two or three lambs (mastitis, too little feed, etc.).
- Joint injury or illness.
- Pneumonia, which may be associated with lambs that received no colostrum and therefore lack antibodies.
- Difficult lambing.
- A "genetic will to die." Actually, a number of lambs die for no apparent reason. A genetically related lack of vitality may well be the cause.

Hypothermia (Chilling)/Hypoglycemia (Low Blood Sugar)

Clinical Signs and Causes. Rectal temperature is the primary guide to identification and treatment of hypothermia in lambs. Mild to moderate hypothermia is characterized by a body temperature between 98° and 102°F; severe hypothermia occurs when the body temperature is below 98°F. Hypothermia is caused by excessive body heat loss coupled with reduced heat production. Newborn lambs are unable to regulate their body temperature for the first 36 hours after birth so environment and management practices greatly affect how much body heat newborn lambs may lose. Energy from body fat, colostrum, and milk is required by lambs to generate heat. Starvation depletes stored energy sources quickly and then limits the intake of adequate amounts of high-energy nutrients. Common, but not necessarily routine, findings on necropsy that suggest starvation include: the absence of milk in the stomach and intestine, a change in the color and consistency of fat around the kidneys from light tan and firm to purple and gelatinous, and a complete absence of fat in the abdomen.

Prevention and Treatment of Hypothermia/ Hypoglycemia. Husbandry practices intended to prevent losses from hypothermia/hypoglycemia/ starvation include:

- (1) providing shelter to ewes with newborn lambs to reduce body heat loss, especially during times of severe weather stress,
- (2) shearing or crutching ewes before lambing so lambs are not hindered from nursing, and ewes are less likely to lamb in exposed areas,

- (3) confining ewes and their newborns for one to two days to promote bonding and to check ewes for adequate milk production,
- (4) helping lambs with suckling during their first 24 hours to assure adequate intake of colostrum,
- (5) grafting extra lambs to ewes that lost their lambs, and
- (6) culling ewes with poor milk production.

A common ratio of lambing pens (jugs) to ewes is 1:10. If severe winter weather is expected during lambing, a ratio of one jug for every eight ewes is probably a better and safer estimate of jug requirements.

Adequate nutrition of the late gestation and early lactation ewe is another critical factor in preventing hypothermia and starvation in lambs. Ewes with an energy deficiency are prone to low milk production and pregnancy toxemia. Both conditions contribute directly to starvation in lambs.

Hypothermic lambs do not get better on their own. For treatment of hypothermia, the following steps are recommended:

1. Move ewe and lambs to shelter or, if the hypothermia is severe, remove lambs from the ewe.
2. PRIOR TO WARMING, lambs more than five hours old with severe hypothermia (< 37°C, 98°F) should be given an intraperitoneal injection of a warm 20-25 percent dextrose (glucose) solution at a dose of four to five milliliters (CC's) per pound of body weight. The injection can be given by the following procedure: (1) hold the lamb by the back legs in a hanging position, (2) disinfect the injection site that is located one inch either side and one inch behind the navel, (3) slowly insert a 20-gauge, one inch sterile needle, with the syringe containing the dextrose attached, into the abdomen, and 4) direct the injection toward the rump.
3. Towel-dry wet lambs. Supplement with heat or warm in a warming box using dry heat, e.g., a hand-held hair dryer or heat lamp. Temperature in the box should not exceed 103°F. Avoid overheating lambs by affixing a thermometer to the inside of the box and checking the lambs and the box thermometer regularly, at least every 30 minutes. Lambs should be warmed to 99°F.
4. Tube feed colostrum at the rate of 20 to 25 milliliters per pound of body weight per feeding after the lamb has been warmed (30 milliliters is approximately equal to one fluid ounce). Lambs unable to nurse on their own should receive this amount of colostrum by stomach tube three to four times during the first day of life.
5. Return the lambs to the ewe when rectal temperature is normal (usually one to three hours), and they can stand and nurse on their own. If lambs are still weak after treatment, they should be fed regularly by stomach tube until they are strong enough to join their mother.
6. If only one of a set of twin lambs is involved, remove both lambs from the ewe while warming is taking place and return both lambs simultaneously. Observe lambs frequently to check for relapses.

The procedures outlined are useful for lambs showing these signs no matter what the production system. However, these procedures are labor-intensive and can most easily be justified in intensive management systems in which large lamb drops are occurring. However, if the need to use these less natural procedures to assure lamb survival is not taken into account when selecting replacement animals, then it is likely that sheep will become even more dependent on man for survival.

Colostrum. Many infectious diseases occurring in the first few days of life result because the lamb did not get any or enough colostrum during the first 12 hours after birth. The newborn lamb, unlike the human baby, is born without protective proteins, called antibodies, in the blood. Antibodies are necessary to protect the lamb from bacteria and viruses that gain entrance into the body by various means. The first milk of the ewe, called colostrum, contains antibodies necessary for lamb survival. Vaccinating the ewe a month before lambing can increase colostrum antibodies against some diseases, such as the clostridial diseases. The antibodies consumed by the lamb pass from the intestines into the blood stream. However, a gradual closure of the intestine to the passage of antibodies occurs and is completed by approximately 12 hours after birth. Therefore, it is extremely important for the lamb to get colostrum as soon after birth as possible. Colostrum also contains concentrated levels of energy, protein, vitamins, and other nutrients needed by the lamb. To ensure survival, the lamb should consume an amount of colostrum equal to five percent of its body weight. For example, a 10-pound (160 oz.) lamb should receive eight ounces of colostrum within the first few hours after birth, four ounces immediately, and an additional four ounces within the next 12 hours. It is easier, quicker, and more effective to use a stomach tube rather than a bottle to feed colostrum to a weak lamb. A supply of colostrum should be kept on hand in case colostrum supplementation is necessary. Hypothermic lambs, orphaned lambs, and rejected lambs all may need colostrum supplementation. Fresh ewe colostrum is best, but stored colostrum can be used for up to two days if chilled properly. Alternatively, if frozen, colostrum can be good for a year or more. Frozen colostrum should be stored in small quantities (e.g., use Styrofoam or paper cups or ice cube trays) because thawing and refreezing will destroy antibodies. Colostrum can be thawed to room temperature with a water bath such as a double boiler. Microwave oven thawing is dangerous because overheating colostrum increases the risk of destroying antibodies. If ewe colostrum is not available, cow and goat colostrum are good alternatives. There are also colostrum supplements available commercially. None of the alternatives is as good as ewe colostrum, but all are better than none. Cow colostrum is less concentrated than ewe colostrum so the lamb's nutrient needs will require about 30 percent more cow colostrum. Also, bovine colostrum can transmit Johne's disease from cattle to sheep as well as occasionally cause hemolytic anemia in lambs. Pooling colostrum from several cows will help minimize both of these risks. Goat colostrum can contain CAE virus or other disease agents that are infectious to sheep. Flock owners should ask about the disease status of the goat or cow herd before obtaining colostrum from that farm.

Pneumonia

Pneumonia, the number one lamb disease, occurs because of a lack of colostrum, because of "mastitis milk", because of poor ventilation or because ewes are heavily infected with *Pasteurella* (One study showed a 99 percent infection rate, so the organism is frequently present). A lamb

contracts pneumonia because it can't stand such stresses as too little milk, draft, dampness, and ammonia off a manure pack.

Early diagnosis of sick, unthrifty young lambs is crucial. Guessing the cause is relatively simple, because 90 percent of the time they are either starving or have pneumonia. Strive for early detection and start antibiotic treatment before the lungs have been permanently damaged. Treatment for pneumonia is to inject the lamb with antibiotics. Adequate selenium and vitamin E help the lamb withstand pneumonia. Keep the lamb strong!

Baby Lamb Scours

Scours are due to one of many bacteria or viruses. To minimize the problem, an adequate intake of colostrum (10-15% of body weight means 6 to 20 ounces of either ewe or cow colostrum depending on the size of the lamb) must be given in the first 12 hours of life.

Scours may hit the lamb the first day of life. The lamb succumbs due to added stress (draft, ammonia, and poor ventilation). *Clostridium perfringens* type C or *E. coli* may be the cause of baby lamb scours. Vaccination of the ewe four weeks prelambling may prevent it.

Treat scours with calf-scour electrolytes at the rate of 3% of body weight 2-6 times per day. Because these lambs often get pneumonia the injection of an antibiotic is often recommended. If *E. coli* is the cause, preventive vaccines of the similar disease in cattle have been given to ewes before lambing. Sanitation is a more important preventive measure than any vaccine or antibiotic!

White Muscle Disease

The cause of white muscle disease (muscular dystrophy) is a lack of selenium or vitamin E or both. In Virginia, a lack of selenium in ewe diets is historically common. Signs are lambs born dead or weak or lambs that are unable to rise or walk or that do so stiffly. It may affect six- to eight-week-old lambs as well. Very often the fastest gaining lambs are affected.

To prevent white muscle disease, feed salt containing 90 ppm selenium, feed salt fortified with 100,000 I.U. vitamin E per 100 pounds salt, and injecting young lambs with selenium and vitamin E on day 1 of life.

The Influence of Vitamin E Supplementation During Late Pregnancy On Lamb Mortality and Ewe Productivity

R.W. Kott¹, V.M. Thomas¹, P.G. Hatfield¹, T. Evans² and K.C. Davis
Montana State Univ., Bozeman, MT Roche Vitamins & Fine Chemicals, Nutley, NJ.²

ABSTRACT

Mature Rambouillet and Targhee ewes over a three year period (approximately 430 ewes per year) were randomly allocated within breed and age to either a vitamin E supplemented group or a control group receiving no supplemental vitamin E. Beginning approximately three weeks prior to the first expected lambing date all ewes were fed 2.3 kg/d of alfalfa-grass hay and .23 kg/d of a barley based supplemental pellet. The pellet with added vitamin E contained 1450 mg of d-1-

alpha tocopherol acetate/kg and provided an additional 330 IU/hd/d of vitamin E. Selenium was incorporated into a trace mineral salt and fed free choice to all ewes throughout pregnancy. In ewes lambing in the early part of the lambing season, vitamin E supplementation reduced ($P < .05$) lamb mortality (17 vs. 12 percent lamb mortality for untreated vs. vitamin E supplemented ewes, respectively). Consequently, these ewes weaned 2.9 kg more lamb per ewe lambing ($P < .05$). No differences were observed ($P > .05$) in lamb mortality or kg of lamb weaned per ewe lambing among ewes lambing during the late lambing period.

Entropion

Entropion, or turned under eyelids, occurs most frequently in and is most damaging to lambs. It is an inherited condition and appears in most breeds. One treatment is to re-move a small section of the skin about 3/8 inch below the bottom eyelid, which will draw down the eyelid when the skin heals. The eyelid also can be clipped or drawn down with thread. Still another treatment is to inject ½ cc Penicillin into the lower lid in such a way as to fold the lid out. This treatment is less certain than the others described but can be done very quickly. Failure to correct the condition will lead to an unthrifty lamb that may remain blind.

Polyarthritis (Navel Ill)

Polyarthritis is arthritis involving one or more leg joints. It may or may not produce pus about the joint. Bacteria causing it include *Corynebacterium pseudotuberculosis* (the same bacteria that cause caseous lymphadenitis in ewes), *Erysipelothrix insidiosa* (swine erysipelas) as well as E coli and Staph organisms that are found in all environments. The organism enters the body through the umbilicus (navel) or through docking or castrating wounds. To prevent polyarthritis, disinfect the navel cord frequently and disinfect and do all possible to keep docking and castrating wounds clean. Keeping newborn lambs in as clean an environment as possible is crucial. Treatment with antibiotics is only moderately successful as a treatment.

Tetanus: Tetanus is caused by *Clostridium tetani*, which persists in the soil of most farms. Next to horses, sheep are the most susceptible farm animal. The bacteria are anaerobic, so wounds in which air contact is limited are most susceptible to tetanus. Docking and castrating with rubber bands increase the incidence of infection. Disinfecting docking and castrating wounds will minimize it. Infected sheep become stiff, move with a straddled gait, and usually die. Vaccinating ewes and/or lambs with tetanus toxoid and/or tetanus anti-toxin prior to docking is effective.

Infectious Causes of Stillborn, Weak, or Dead Lambs at Birth: A variety of bacterial, viral, and protozoal disease agents in sheep cause stillbirths and weak lambs. Bacterial causes include *Brucella ovis*, *Chlamydia* spp., *Campylobacter* spp. (Vibriosis), and *Coxiella burnetti* (Q fever). The two main viral causes are border disease virus (hairy shaker disease) and Cache Valley virus. The primary protozoal cause of stillbirths and weak lambs is toxoplasmosis. In each case, these agents also cause other disease signs such as abortion, pneumonia, and diarrhea. However, a higher than expected number of either stillborn or weak lambs may be the “red-flag” that prompts a flock owner to evaluate and investigate the disease status of the flock. Communication among the flock owner, attending flock veterinarian, and diagnostic laboratory personnel is

critical for developing a systematic approach to identifying infectious causes of stillbirths and weak lambs.

Border Disease (Hairy Shaker Disease)

Clinical Signs and Cause. Border disease (BD), which was first recognized in the border region between England and Wales, is now recognized as a disease of sheep worldwide. The hallmark signs of BD are newborn lambs with a hairy rather than woolly birthcoat that exhibit muscle tremors (hence the alternate name of hairy shaker disease). Other characteristics of a BD lamb are small size, low birth weight, weakness, a dome-shaped skull, and a short, blocky appearance. BD lambs have a low chance for survival. If they do survive, the muscle tremors may disappear, but BD lambs will grow at a slow rate and are highly susceptible to other diseases.

A virus closely related to bovine viral diarrhea (BVD) virus causes BD. The effects of BD virus on a fetus depend upon the age of the animal at the time of infection. During the first 90 days of gestation, a fetus exposed to BD virus may suffer a variety of consequences. It may be resorbed, die and become mummified, aborted, or continue its development and be delivered full-term. After 90 days of gestation, a fetus exposed to BD virus can overcome the infection with no detectable signs of disease. Some lambs infected with BD virus in utero and born alive may not develop the hallmark signs of BD. Instead, they may appear normal, but are persistently infected with the virus. The virus lives in cells throughout these lambs. A lamb with a persistent infection is an important reservoir of infection within the flock, because it will shed high numbers of the virus throughout its life every time it sneezes, coughs, defecates, urinates, or bleeds.

Diagnosis. Border disease should be suspected in a flock if any of the previously mentioned clinical signs are observed. Testing serum samples from a group of animals for antibodies to BVD virus can detect if exposure to BD virus has occurred in the flock. A diagnosis of BD is confirmed by isolating the virus from tissue samples sent to a diagnostic laboratory. Most persistently infected animals do not develop antibodies to BD virus so a negative serological test on an individual animal would not rule out the possibility that it has BD. In a flock with a known high prevalence of exposure to BD virus, an animal without a BVD titer should be considered suspicious for persistent infection. Blood from a suspect BD virus shedder (now called “Persistently Infected or PI) can be cultured for the presence of the virus.

Prevention. There is no specific treatment for BD, nor is there any USDA-approved vaccine for its prevention. BVD vaccines for cattle have been tried in sheep to control BD; results have been mixed. The extra-label use of a BVD vaccine, or any other vaccine or drug, can only be prescribed by a licensed veterinarian in the context of a valid veterinarian-client-patient relationship. Efforts to control BD should focus on preventing or minimizing the exposure of susceptible pregnant ewes to the virus. Methods of control include maintaining a closed flock, testing flock additions for exposure to BVD virus before they are allowed to mix with the flock, and identifying and removing persistently infected animals.

Sudden Death: A young lamb that dies rapidly or is found dead with no apparent prior signs of illness is a major frustration to producers. Individual reactions to this event range from panic to unconditional acceptance. Instead of either extreme, a sound approach should be developed to determine the extent of the problem, its cause, and the source of exposure. Then, specific corrective measures can be formulated and implemented to prevent future problems. Like most

disease signs, sudden death has a variety of possible causes. The most common causes include infectious diseases and trauma

Infectious Disease Causes of Sudden Death

The most common infectious disease causes of sudden death in lambs less than three weeks of age are bacteria and the toxins they produce. The bacterial agents include *Clostridium* spp., *Escherichia coli*, *Salmonella* spp., and *Pasteurella hemolytica*. Since these agents are pervasive in the environment and are normal inhabitants of the respiratory or digestive tracts of animals, lambs will be exposed. But the chances for disease and death are reduced greatly if the lamb consumes adequate quantities of good quality colostrum during the first day of life. In addition, producers should pay close attention to the cleanliness of lambing sites, avoid permanent lambing sites, and disinfect the navel of newborn lambs with a strong iodine solution as soon after birth as possible to avoid problems associated with these agents. The role of colostrum in preventing disease as well as the disease agents *C. perfringens type C*, *C. tetani*, and *E. coli* is crucial.

Pregnancy Toxemia in Ewes

Pregnancy toxemia occurs in ewes in late pregnancy. With awareness this can be prevented. Early treatment of affected animals will save many of them.

Pregnancy toxemia in ewes is a metabolic disorder which develops when the body's energy requirements are not being met. In the final two months of a ewe's pregnancy, 70% of the lamb's growth is taking place. It is also an important time for udder development and inadequate nutrition at this stage can detrimentally affect milk production after parturition.

It is therefore a very important phase in the pregnancy and it is very important that the ewe receives adequate nutrition. Though twin carrying ewes are affected more often, single carrying ewes are not exempt.

At a time of increasing energy needs, the enlarging uterus is taking up space in the abdomen, making it more difficult for the ewe to eat enough, especially if her food consists mostly of poor quality roughage. Any stressful event such as sudden cold periods, worm infections, feet or mouth problems, changes in rations or transport can bring on pregnancy toxemia.

Signs

- Separation from the flock, lagging behind the flock when it moves
- Standing still when approached
- Drowsiness
- Standing in water lapping
- Apparent blindness
- Death 2 -6 days after first signs
- Stumbling into objects when moved
- Head pulled back or sideways
- Thick yellow discharge from the nose
- Tremors and spasms of head, face and neck muscles

Treatment

Early treatment is necessary for success. Once individual ewes are affected, it is an indication that the rest of the flock is also in trouble and feeding may be inadequate. In the short term they can be helped by providing them with propylene glycol. In the longer term they may need to receive a higher quantity or quality of concentrate and better quality hay.

Treatment options for affected animals:

- Propylene glycol given orally 100ml (30 ml) twice daily,
- Glucose: 20ml of sterile 50% solution given under the skin or intravenously daily to correct the hypoglycemia
- Dose with “Fresh cow drench”

Provide good quality hay and limited grain. TLC is important. Getting ewes to eat is crucial and sometime very challenging.

Ultimately lambing helps the problem a lot...but inducing lambing often results in immature, dead lambs.