

# **Managing Kidding and Lambing**

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## **Abortion**

There are many, many infectious causes of abortion, most of which are zoonotic, meaning that if you handle weak or dead fetuses or placentas with bare hands you may get sick. Diagnosis requires laboratory examination of the fetus and placenta; paired serology may be helpful. While awaiting lab results, your veterinarian might consider treating with long-acting tetracycline subcutaneously at 20 mg/kg every 3 days.

Toxoplasmosis causes abortion at any stage of pregnancy, mummification of fetuses, weak neonates, and white spots in cotyledons of the placenta. Keep the farm and feeds free of young kittens.

Chlamydiosis causes abortion in the last 4-6 weeks of gestation. Intercotyledonary areas of the placenta are thick and the lab detects acid fast organisms. Animals abort at the pregnancy following exposure. They also shed the organism in vaginal secretions when in estrus, so animals that abort with this disease should be culled. Vaccine must be given before pregnancy begins to be effective. Campylobacteriosis is more common in sheep than goats, and the vaccine is helpful in the face of an outbreak. Other causes of abortion include listeriosis (especially from silage or baylage), salmonellosis, leptospirosis, Q fever, and Cache Valley virus.

Nutritional deficiencies such as iodine or selenium deficiencies can also cause abortion in small ruminants. Furthermore, goats stressed by poor nutrition (poor quality hay, not being able to get grain because of competition) may abort before they die of starvation. Check the body condition of animals that abort. If the hay is poor, buy better hay or at the very least allow the animals to sort through a large amount of hay each day to get the best of a bad lot.

## **Pregnancy Toxemia**

Ewes and does in the last month or so of pregnancy may have difficulty meeting the nutritional demands imposed by multiple fetuses. Signs of pregnancy toxemia include abnormally small fecal pellets (an indication that the animal is eating poorly), reluctance to rise, self-isolation from the flock, or teeth grinding. Late pregnant animals that are off feed should be checked for ketones in the urine, using commercial test strips or pills. The pill or strip turns purple when ketone bodies are present. Urine can be collected when the ewe or doe rises as a person enters the pen, or the ewe's nostrils can be held closed for up to 45 seconds to induce urination. Many animals with pregnancy toxemia are very dehydrated, and in addition the bladder may be empty, so release the sheep before it dies of suffocation! Holding the nose shut to induce urination is not commonly tried on goats.

Initial treatment of sheep or goats with pregnancy toxemia begins with 2 ounces (60 ml) of propylene glycol orally 2 to 3 times a day or 45 to 60 ml of a commercial product such as Energy Malt® orally twice a day. Additional supportive treatments are 60 ml of calcium borogluconate subcutaneously divided into 4 sites, mixed B vitamins or thiamine, and intravenous dextrose (60 ml of 50% solution diluted to slightly less than 500 ml in sterile water). Animals that are acidotic and dehydrated will benefit from large volumes of intravenous fluids with added sodium bicarbonate. Antibiotics are indicated if the fetuses may have died. If the ewe or doe is unresponsive and unable to rise, the prognosis is grave. If the animal is not eating

by the next morning a C section may be attempted to try to save its life. If there is partial response and the last possible breeding date is known, induction of parturition with 20 or 25 mg of dexamethasone may be attempted if the ewe has reached day 139 of pregnancy or the doe has reached day 141. Induction requires approximately 48 hours, and will come too late for severely affected animals. Goats but not sheep can be induced with prostaglandin (10 mg of Lutalyse®) and kidding or abortion typically occurs in 30 to 36 hours.

Prevention of pregnancy toxemia in animals pregnant with two or more lambs requires supplying the protein and energy needs of the dam and the developing fetuses without causing a grain overload/indigestion situation. The secret is good quality forage, with supplementation of perhaps a pound of grain per ewe per day the last 3 to 4 weeks of pregnancy. The grain needs to be introduced gradually and with ample feeder space. Yearlings should be fed separately from adults to minimize competition. Older animals that have lost molars may need a pelleted roughage source to supply their nutritional needs. Unless pets, cull them instead of rebreeding.

### **Hypocalcemia**

Although it is rare for sheep to have a hypocalcemic episode similar to milk fever of dairy cows at the time of lambing, late pregnant and heavily lactating ewes are especially susceptible to calcium deficiency. Hypocalcemia may be precipitated by exercise, as when the sheep are driven in from pasture or chased by dogs. The sheep becomes too weak to continue or to get up and may lie on its sternum with the hind limbs extended out behind it. Often the head is held low with neck extended, and the breathing is labored as if pneumonia were present. Fecal output and rumen contractions are decreased and a mild bloat may be observed. Ewes that are calcium deficient at the time of lambing may be slow to expel their lambs, such that dystocias or stillbirths result. Does can also become hypocalcemic at parturition but dairy does more commonly “crash” at 3 or 4 weeks into lactation.

Treatment of hypocalcemia requires immediate administration of calcium to restore muscle function before the animal dies of bloat or heart failure. A commercial 23% calcium borogluconate solution is used; avoid the combination products with phosphorus and dextrose added. A veterinarian will usually give 60 ml (cc) intravenously to a ewe that is unable to rise, but this must be done very slowly to avoid provoking potentially fatal irregularities of the heart beat. Less severe cases or instances where the diagnosis is not certain are handled with 60 ml of the 23% solution given subcutaneously, in four sites such as high and low behind the shoulders on each side. Goat owners report that Tums® antacid pills are readily accepted by their animals and provide a calcium source in times of emergency or heavy production, as each pill contains 500 mg of calcium. By comparison, 500 ml of the injectable 23% calcium gluconate solution contains 10.7 g of calcium and the 60 ml sheep dose contains 1284 mg.

Prevention of hypocalcemia may require supplementing the deficient diet of late pregnant and lactating animals by addition of dicalcium phosphate to the trace mineral mix offered on pasture. Grain rations formulated for lactating ewes and does usually contain supplemental calcium. In dairy cattle feeding, alfalfa is often avoided in the diet of dry cows, originally because it was believed to be too high in calcium and more recently because high potassium levels in heavily fertilized alfalfa interfere with magnesium absorption, and low magnesium then induces hypocalcemia. If dairy sheep are being fed alfalfa hay or haylage from cow dairy farms, avoid feeding forages with a potassium concentration substantially above 1%

on a dry matter basis. Based on recommendations for dairy cattle, the potassium to magnesium ratio in the ration in late pregnancy should not exceed 4:1.

### **Normal Parturition**

Despite the frequency of multiple births, most ewes and does complete parturition without assistance. Softening and total disappearance of the ligaments around the base of the tail is a good indication that parturition will occur in the next 12 hours. The mother often waits until the barn is quiet and may isolate herself from the flock or others may back away to give her room.

### **Correction of Dystocia**

As a guide for when to interfere, use the 30-30-30 rule. If a ewe or doe goes into labor or part of the fetus or placenta shows, allow 30 minutes for delivery to be completed before examining the dam. An exception would be if the lamb or kid is yellow with meconium, indicating that it is already short of oxygen and needs to be delivered rapidly. If everything appears to be in normal position and posture, allow a further 30 minutes before delivering the lamb or kid. If the mother has had one or more fetuses unassisted but an additional fetus is believed to be present (part visible, further straining, fetus ballottable through the abdominal wall) allow a further 30 minutes to elapse before delivering the next fetus.

It is imperative to wash the vulva (use a mild dish detergent or betadine), wear a sterile glove (for protection of the ewe or doe as well as for protection of the examiner from zoonotic diseases), and use plenty of lubricant when examining the birth canal or manipulating a fetus. A head snare (available from many supply catalogs as a "lamb puller") is very useful for correcting a head back position. Most lambs and kids can be delivered in either anterior (head first) or posterior (hind feet first) presentation with one limb retained. Swing the lamb, clear its nose, and place it in front of the dam. Check for an additional fetus, and follow up with antibiotics if any major manipulation was required. If you pull one, pull the rest.

The next two paragraphs are for your veterinarian. Do not hesitate to cut off a swollen head with a scalpel blade if the fetus is dead and room is needed to retrieve a retained front limb. Subcutaneous fetotomy techniques quickly remove limbs of tangled dead twins and triplets. Cut through the skin encircling the leg just above the carpus and it will be easy to pull off the front limb of a rotten fetus. Reposition the dam (roll over or elevate the hindquarters) to aid manipulation or repulsion of the fetus. Flunixin (Banamine®, 1 ml per 100 pounds IV or SC) is used for pain relief. A lidocaine - xylazine epidural early in a dystocia will provide analgesia, limit straining, and simplify a C-section if surgery is ultimately required. Antibiotics by injection are indicated after a difficult dystocia or delivery of emphysematous fetuses.

Caesarian sections on small ruminants are relatively easy to perform. Left flank, right flank, and ventral midline approaches (directly in front of the udder) have all been used. Surgery can be done standing or down. Likewise, the anesthesia can be supplied with a line block, inverted L block, paravertebral block (1 ml lidocaine above and below the tips of the transverse processes of L1, L2, and L4), epidural injection of lidocaine with xylazine, or gas anesthesia. Avoid xylazine tranquilization of the dam if possible, as pulmonary alveolar hemorrhage and depression of both dam and fetuses are likely adverse sequelae. A blindfold is very helpful for restraining small ruminants. Normally all fetuses are removed through one

incision. If fetuses are fresh and the uterus intact at the time of surgery, the prognosis for rebreeding is good.

### **Prolapses**

A prolapsed uterus is easily replaced after a 2 ml epidural (with 2 to 4 mg xylazine in the lidocaine for longer effect), cleansing of the prolapse, and elevation of the hindquarters. Systemic antibiotics and tetanus prophylaxis are advised, but the animal usually breeds back and the prolapse does not recur at the next parturition. Prolapsed vagina may have a hereditary component or be linked to a very short tail dock in sheep. Prolapsed vaginas frequently repeat (40%) in the next gestation, so cull the dam and its offspring. A plastic paddle ("bearing retainer") or rope truss permits unassisted parturition. If a suture is placed across the vulva to keep the prolapse in, very close supervision will be required.

### **Neonatal Care**

Human involvement during indoor lambing or kidding begins with "Clip, Dip, Strip, Sip". Shorten the umbilical stump with scissors if it is long and dip the umbilicus into 7% tincture of iodine. A film canister holds the right amount of iodine and avoids contamination of a larger stock bottle. Strip the plugs out of each teat so that the lamb or kid doesn't have to suck very hard to get its first drink, then leave mother and young together but watch closely that the neonate actually sucks. A lamb or kid that has eaten will have a bulging belly when it is held up by the front legs. If the forage locally is selenium deficient and the dams have not been adequately supplemented throughout pregnancy, an injection of vitamin E/selenium may improve the strength and immune function of the newborn.

The ewe needs time and protection from interference (lamb stealing) while she licks her lambs dry and learns to recognize and count them. The lambs have to find the udder and learn to recognize their mother. Counting is difficult for sheep, so the ewes are typically kept in a claiming pen for one day for every lamb being raised. Thus a ewe with a single is released to the mixing pen after one day, a ewe with twins stays two days, and the ewe raising triplets is given three days to figure everything out.

A normal, dry neonate that is nursing well can withstand very cold temperatures. Shearing the ewe prelambling encourages her to seek a sheltered spot to lie down and permits heat transfer from mother to the offspring lying beside it. The weak lamb or kid may benefit from a knitted sweater, old sock with the toe cut out, or a sweatshirt sleeve as a coat. Cut holes for the front legs and provide a slit ventrally for urination by the male. The warmth goes with the lamb wherever it goes and there is no danger of a barn fire. In rainy climates, plastic raincoats have been used successfully to keep young lambs alive in wet cold spring weather. The coat may only stay on a few days or weeks but certainly saves lives if the weather is bad.

Lambs are occasionally grafted onto a different mother. A slime graft is performed by rubbing birth fluids or placenta onto an orphan lamb and putting that lamb in front of the ewe that delivered a dead lamb or a single and has enough milk for another lamb. Acceptance may be improved by placing a gloved fist into the dam's vagina for several minutes, then popping the hand out to simulate passage of another fetus. A skin graft is performed by cutting the skin off the ewe's own dead lamb and putting the skin onto an orphan as a coat. The coat is removed a few days later after the ewe's milk has passed through the lamb. An older and vigorous orphan can have its limbs tied together to make it flop around more like a neonate.

Tying or stanchioning the ewe so it can't evade or head butt the lamb may also lead to adoption after a few days to a week or more.

### **Colostrum management**

If kids and lambs are dam reared, nutrition of the doe must be good if enough colostrum is to be produced. A little colostrum should be stripped from each teat by hand to ensure that dry plugs in the teats do not prevent suckling and that mastitis is not present. Obviously, if the lambs or kids are nursing their dams normally you have no way to know how much they are drinking \_ just that they are active, not hunched, and look full. If lambs die of starvation at 24 hours but the mother's udder is full of colostrum at that point, check for protein deficiency in the diet, leading to delayed colostrum production.

If the udder is over full or unbalanced, enough colostrum should be stripped out to make suckling easier for the neonates. This colostrum can be tube fed to weak or slow to nurse lambs or kids or can be frozen in 240 ml (1 cup) quantities for later use in other lambs or kids.

When artificially reared, the lamb or kid should consume 1 ounce of colostrum per pound body weight three times during the first 24 hours. Thus an 8 pound lamb would receive 8 ounces (about 240 ml) every 8 hours for 3 feedings if hand fed. In metric circles, the protocol commonly proposed is 50 ml colostrum per kg four times the first day. Owners with lots of time can divide this into more, smaller feedings. The first feeding should be given as soon as possible (tube fed if necessary), and certainly within 6 hours after birth. When triplets or quadruplets are born, the smaller size of the neonate predisposes it to chilling while it may be weaker or even premature when compared with a single or twin. Additionally, the dam may not have enough colostrum during the first few hours after delivery to adequately feed a large litter. When disease control programs (such as CAE eradication) require hand rearing and heat treatment of colostrum, under feeding is common, which leads to increased susceptibility to enteric infections and septicemia.

### **Hypothermia and Hypoglycemia**

The lamb or kid that is not licked dry by its mother quickly becomes chilled and looks slightly hunched. The neonate with hypothermia needs to be dried off and warmed up. The brown fat around the heart and kidneys that supplies nonshivering heat production is often exhausted by 5 hours if no colostrum is consumed. Then hypoglycemia (low blood sugar) develops in addition to the initial hypothermia. The lamb that is older and dry also becomes hunched and has a tucked up abdomen if it does not nurse successfully. It cries plaintively and is suffering from starvation.

If a lamb has a temperature of 99 to 102°F (mild hypothermia), it should be dried off and fed by stomach tube. The ewe and lamb should be provided with shelter. If the lamb's temperature is below 99°F and it is less than 5 hours old, it should be towed dry and rewarmed and then tube fed before being returned to its dam. Rewarming can be done in a box or dog crate with warm air forced through it, monitoring the temperature with a thermometer to avoid overheating. This is preferable to a simple heat lamp, which may overheat one side of the neonate or start a barn fire if knocked down. Another method of rewarming used by some producers is to place the lamb in a water-tight plastic bag, tied around the neck, and submerge all but the head into warm water. It is also possible to heat several large bath towels in the clothes








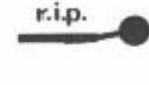

drier, turn the drier off, and install the chilled lamb into the warm nest of towels. If one lamb in a litter needs to be revived, remove the entire litter so that the mother is more apt to accept the treated one when it is returned along with its siblings.

If the cold lamb is older than 5 hours but able to hold its head up, it should be dried and tube fed, then rewarmed until the temperature rises above 99 °F and tube fed again, then returned to the ewe. If the hypothermic lamb is over 5 hours old and unable to hold its head up it needs an injection of intraperitoneal dextrose before it is rewarmed. After warming it should be tube fed and returned to its mother or transferred to a weak lamb unit.

To stomach tube a neonate, an 18 French red rubber feeding tube is inserted through the mouth to the level of the last rib. No mouth gag is needed in the neonate and the stomach tube can be palpated between the trachea and the cervical vertebrae when positioned properly. A 60 cc dosing syringe fits on the stomach tube. Colostrum or milk can be delivered by gravity, using the barrel of the syringe as a funnel, or can be injected slowly.

The intraperitoneal glucose is given with a 1 inch 20 gauge needle, one inch lateral and one inch caudal to the umbilicus. The lamb is suspended by its front limbs during injection.

Using a 20% solution of dextrose warmed to body temperature, administer 25 ml to a small lamb, 35 ml to a medium lamb, and 50 ml to a large lamb. Follow with a subcutaneous injection of long acting antibiotic. Now rewarm the lamb and feed it. Do not use this technique on an older lamb with enteritis and diarrhea, as peritonitis is likely to develop.

Temperature °C(°F)	Cause of hypothermia	
	Exposure (0-5h)	Starvation (12h+)
38(100)		
36(97)		
32(90)		
Below 30(86)		
Below 20(68)		

**Figure 3.7** The appearance of hypothermic lamb related to rectal temperature and the cause of hypothermia

### **Post-colostrum Feeding of the Neonatal Dairy Kid**

Goat kids can thrive on goat milk (dam fed or bottle/pan fed), whole cow milk, or high quality goat, lamb, or calf milk replacers. In general, the milk replacer should be 16 to 24% fat and 20 to 28% protein, with milk based protein more digestible than plant protein sources. The milk replacer may be fed warm or cold, but quantities need to be increased in the face of cold ambient temperatures or suboptimal housing conditions. By 1 week of age, the dairy kid can do well on 2 or 3 feedings of warm milk per day totaling 1 liter, with a maximum of 1.5 to 2 liter offered by 2 weeks of age. Concentrate is fed to permit continued good growth while the milk intake remains constant until weaning when a body weight of approximately 22 pounds (10 kg) has been achieved. **Necropsy Examination**

Whenever possible, veterinarians and producers should necropsy neonates that are found dead or die within the first few days. Wear protective gloves and allow for safe disposal of the bodies afterwards. Recording the weight of the lamb or kid and whether it is a single, twin, or higher multiple is useful for monitoring nutrition of the dam and possible presence of an abortion disease that interferes with transplacental transfer of nutrients. Absence of copious brown fat around the heart and kidneys and no milk in the abomasum suggest a nutritional or other management problem. If the animal has eaten, an infectious disease such as pneumonia or septicemia is more likely to be present and submission of further lambs or kids for a full necropsy by a pathology service may be warranted. A large yellow fetus with a swollen head probably died of dystocia. If there is no evidence of dystocia but the lungs of the fetus do not float in water, it was stillborn and might reflect an abortion disease. Placenta and dam's blood will need to be submitted along with the fetus to the diagnostic laboratory in order to obtain an adequate workup. Fetal lung and abomasal contents are appropriate for culture of *Campylobacter*, but smears of the placenta will be needed to diagnose chlamydiosis.

