

# Enterotoxemia

## "OVEREATING DISEASE" OF SHEEP AND LAMBS

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ENTEROTOXEMIA is a highly fatal disease of sheep and lambs. It can affect all sexes, ages and breeds of sheep. It is caused by the bacteria *Clostridium perfringens* (type D) which under certain conditions produce a poisonous substance. This substance, called a toxin, causes rapid death.

These bacteria are normally present in the intestinal tract of sheep and lambs but are harmless under normal conditions. Lambs nursing very heavy milking ewes, rich grain rations for creep or feeder lambs excess amounts of corn or concentrate in relationship to roughage, lush pasture or in some cases extremely high quality clover or other legume hay may create conditions conducive to toxin production. There is evidence to suggest that heavy tapeworm infestation may cause sluggish action of the intestines and this may contribute to an enterotoxemia problem.

### SYMPTOMS

The most common symptom seen in an acute outbreak of enterotoxemia is the unexpected finding of dead lambs. These lambs are generally individuals that have been doing well and are in good flesh. The most obvious thing is that the head seems to be drawn upward in an arched and extended position.

If such lambs are seen prior to death, they will usually be down on their side, grinding their teeth, paddling and kicking violently with their feet, and showing evidence of brain disturbance. Death usually follows rapidly.

Occasionally lambs will have started to scour a short time prior to other symptoms but this is usually overlooked or attributed to other causes.

The name "overeating disease" is actually incorrect since the problem is more related to the type of ration rather than the quantity. The disease is sometimes called "apoplexy" because of the sudden deaths which it causes. It also is known as "pulpy kidney disease" but this too is somewhat incorrect. Sheep that die from enterotoxemia do have pulpy kidneys but this condition can be confused with normal changes that take place in an animal shortly after death from other causes.

### SUCKLING LAMBS

Suckling lambs nursing well-fed, heavy producing ewes may have more than adequate intake of milk. This is especially true of ewes with single lambs. Milk is an excellent nutrient, but when in excess it may cause scours and result in sudden and rapid death due to enterotoxemia. It may be desirable to separate ewes with single lambs from ewes with twins so they can be fed different quantities of grain, thus to some extent controlling milk production and also reducing grain costs.

A vaccination program on the ewe flock (see below) is the most effective way of preventing losses in suckling lambs as a result of this disease. It is the only way to prevent the losses in lambs nursing ewes on lush pasture. Transferring ewes and lambs to dry lot or poor pasture will decrease the ewe's milk production and thus stop death losses. However, such a shift is not conducive to rapid weight gains and growth of the lambs.

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### CREEP-FED LAMBS

The creep-fed lamb is usually getting a good supply of milk from the ewe plus whatever creep ration he will eat. This is very conducive to maximum gains but also increases the possibility of enterotoxemia.

Antibiotics may be added to the creep ration at the rate of 40 grams per ton. This will aid in preventing death losses from enterotoxemia as well as giving some degree of protection against other diseases. A properly constructed lamb creep is large enough to accommodate all lambs, is well lighted, well ventilated and dry. It also should have adequate feeder space so all lambs can get in away from the ewe flock and eat leisurely.

Some good choice roughage should also be made available to the lambs in the creep area. This is a good source of protein for the lambs and also will aid in prevention of losses due to enterotoxemia. Be sure the lambs have an ample supply of clean fresh water available at all times. As the lambs grow, adjust the lamb creep slots or rollers so that all lambs can enter the creep area freely.

The vaccination program for lambs to be creep fed should be started early so they have time to respond to the vaccine prior to the time they are on a high level of creep-feed intake. (See vaccination program.)

### FEEDER LAMBS

Many lamb feeders make the mistake of turning lambs into corn fields or out to legume pasture as soon as they arrive. When feeder lambs arrive, they should be put in a dry lot or on grass type pasture where they can rest. Provide water and dry hay and observe the lambs closely. Before putting the lambs on heavy grain or turning into corn fields, they should be crotched out or shorn, drenched for internal parasites, dipped for external parasites if necessary, and vaccinated for enterotoxemia. These procedures will require 10-14 days but this time is not lost. "Well-started is half-fed" is quite true. Disease losses and deaths can soon cost a feeder more than can be gained by haste in getting animals onto full feed or turning sick, wormy, unprotected lambs into a corn field where they may die rapidly from enterotoxemia.

When a set of feeder lambs start to go off feed, scour and die, parasites are often blamed. Worming may stop losses due to enterotoxemia temporarily because it tends to throw the lambs somewhat off feed. When a full ration is again consumed, losses may resume. If death losses occur in a set of unvaccinated feeder lambs, a sudden change in ration to one containing a high percentage of roughage will stop death

losses. Likewise, adding 2 ounces epsom salts along with the increased roughage may aid in preventing death losses.

Where feeder lambs are kept in dry lot and fed a ration of mixed grain and roughage (30% ground corn, 70% ground hay) very little problem with enterotoxemia would be expected but when the quantity of grain is increased in proportion to roughage consumed as is necessary to get more rapid gains, the risk of losses due to enterotoxemia increase. Also, when lambs are turned into corn fields either before or after picking, it is impossible to regulate the proportion of roughage and grain consumed.

### THE EWES FLOCK

Death losses in the mature ewe flock are usually associated with accidental consumption of excess grain or when turned into the corn field or other grain fields for cleaning operations, or when on very lush pasture. The disease may also occur frequently in animals being fitted for exhibition. Vaccination is the only protection against such losses. Besides vaccination, when turning a ewe flock into the corn field, be sure to provide access to dry hay unless there is ample roughage in the form of grass and weeds in the fence rows, corn rows or adjacent pasture area. Also be sure to provide clean, fresh drinking water, phenothiazine, and trace mineralized salt at the ratio of 1 to 10.

### GENERAL MANAGEMENT FACTORS FOR PREVENTION OF ENTEROTOXEMIA

- Sort and feed sheep according to size. This prevents the larger and more aggressive ones from crowding out the smaller, weaker or less aggressive individuals.
- Provide adequate feeder space so that all individuals have access to the feed. Spread grain uniformly in feeders.  
Provide 10-12" per lamb for hand feeding.  
4" per lamb on self-feeders.
- Start sheep and lambs gradually on grain and then increase the quantity gradually.
- When self-feeding, a 30:70 grain to roughage ration is desirable for starting. A gradual increase of grain in proportion to roughage is also desirable as the lambs increase their consumption — to a 50:50 or higher grain ratio is desirable to hasten finishing of heavy lambs.
- Avoid abrupt changes in ration.
- The addition of 40 grams of an antibiotic per ton of creep ration or 20 grams per ton of a ration for feeder lambs is an aid in preventing losses. Anti-



Lambs should be vaccinated for enterotoxemia two times at 10-14 day intervals before turning into the corn field and have plenty of good quality hay or pasture available at all times.

biotics and other feed additives are, however, no substitute for good feeding and management practices.

7. Reduce the grain at first signs of diarrhea (scours) or decrease appetite. Provide ample roughage. Sulphur has been advocated as a control for enterotoxemia. Usually added as Flowers of Sulphur, 1 oz./lamb/day is very unpalatable and therefore cuts down on feed intake which, in turn, may prevent losses. *This is a poor way to control the disease.* Furthermore, where protein supplement is fed, protein plus sulphur makes a toxic combination.

#### TREATMENT

There is no effective treatment of enterotoxemia once symptoms have developed. The use of antitoxin may be economically feasible under certain conditions. On suckling lambs, if death losses occur due to enterotoxemia, the use of antitoxin may give temporary protection to the remaining lambs. During this time,

steps should be taken to actively protect them by vaccination. Decrease the grain ration for the ewes so as to cut down on milk production.

At no time should antitoxin be considered as a long-term control measure. It is short-acting and costly and therefore should only be considered on valuable purebreds, 4-H, or show flocks.

#### VACCINATION

The proper use of vaccines, combined with good feeding and management practice, will give the maximum protection available against this disease.

A successful vaccination program must be effective, economically feasible and practical if it is to be followed. To obtain satisfactory results it requires a normal healthy individual to be vaccinated with an effective and safe vaccine which will give a high degree of lasting protection.

Vaccination in no way affects the appetite or the quantity or quality of feed consumed. Vaccination

is used to stimulate the animal to produce antibodies within its own body as a protection against the toxin production of the *Clostridium perfringens* bacteria.

Vaccination for enterotoxemia means the administration of two doses of either bacterin or toxoid at 10-14 day intervals. This first dose serves as a sensitizing dose. The second dose is a booster to give a higher degree of protection, especially to individuals that did not respond markedly to the first dose.

Ewes or feeder lambs to be turned into corn fields should be vaccinated twice at a 10-14 day interval prior to turning into the corn field. Feeder lambs to be fed in dry lot should receive 2 doses of vaccine at 10-14 day intervals prior to full feed. This means that lambs should not be turned into the corn field or placed on full feed until the second vaccination has been given.

Ewes that have previously not been vaccinated should receive one dose of vaccine 1 month prior to lambing with the booster 2 weeks later. If this practice has been followed, an annual booster 2-4 weeks prior to lambing would give the ewes adequate protection and the suckling lambs will obtain enough

protection through the ewe's milk to carry them through the first weeks of life.

Suckling lambs that will be put on creep feed should receive their first dose of vaccine at 7-10 days. Creep-feeding is then started when lambs are 2-3 weeks of age and the second or booster dose of vaccine is given approximately 2 weeks after the initial dose.

Replacement ewe lambs selected from these creep-fed lambs should receive an annual booster with the ewe flock in flocks where enterotoxemia is a problem in suckling lambs.

#### CAUTION:

No vaccination is any better than the quality of the product used and the care and proper administration of this product given to a healthy animal. Cheap vaccines often give poor results. Vaccines must be refrigerated and handled properly. Follow directions and avoid undesirable results due to faulty administration. Losses due to trimming of carcasses necessitated by improper vaccination are passed on to the producer by the packer in terms of a decreased price paid for slaughter lambs. This loss can be avoided.

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