

## Prevention of Neonatal Diarrhea in Lambs

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(Ontario Sheep News, March 2010)

This is the first of a series of articles being written for Ontario Sheep News Magazine by the Small Ruminant Veterinarians of Ontario (SRVO). It is our hope to share with the sheep industry relevant and useful information to improve your profitability. As lambing season approaches I have chosen lamb diarrhea as our opening topic.

The goal of every sheep operation is to maximize the number of kilograms of meat per ewe. One way to ensure this is making sure every lamb that hits the ground has the maximum chance to grow to market weight. In a 1987 article in the Canadian Journal of Veterinary Research entitled Factors Associated with Productivity in Canadian Sheep Farms, Drs Dore, Meek and Dohoo concluded; "Prevention of scours and starvation in lambs should be given priority in order to increase productivity."

Unfortunately the list of organisms which can cause diarrhea in lambs and are prevalent in Ontario is long. It includes, but is not limited to, enterotoxigenic *E. coli*, *Cryptosporidium parvum*, Salmonella, Rotavirus, *Clostridium perfringens* (enterotoxemia), Coccidiosis and Giardia. Fortunately the prevention of all of these pathogens comes down to the same basic husbandry practices.

### **COLOSTRUM**

The single most important factor in prevention of diarrhea is the consumption of an appropriate volume of good quality colostrum. Each lamb should consume at least 15% of its body weight in colostrum in the first 12 hours of life. In a management situation where lambs are nursing you may think there is little you can do to facilitate this but in fact many decisions you make can ensure this happens. The freshening ewe should be moved to a small individual lambing area so that the lambs are never geographically far from the milk bar. The area should be warm enough that lambs are comfortable, up and about and wandering, not huddled in a corner for warmth. An individual pen situation ensures the lamb doesn't get discouraged from nursing by being refused by the wrong mother before bonding has occurred. No ewe has enough milk to give proper colostrum to triplets or quads. It can be time well spent to keep a colostrum bank. This involves freezing colostrum from mature ewes that only had a single lamb and can afford to spare some. It can be stored in 50 – 100 ml aliquots in Ziploc bags or in ice cube trays and fed to the weakest of the lambs. If milking sheep is not something you want to do, you can obtain cow or goat colostrum from a neighbouring farm but you need to do this on consultation with your veterinarian to ensure you do not import any disease problems. If you are unsure how well your lambs are obtaining colostrum there are inexpensive blood tests your veterinarian can run on a couple of randomly chosen lambs to see if failure to receive colostrum is an issue on your farm. To ensure the ewe has a healthy amount of good quality colostrum she needs to be in good health herself. Optimum nutrition before lambing is the key. When the ewe is moved to the lambing area be sure to wipe the udder down with a good quality disinfectant and then dry it. If the teat is dirty and the lamb nurses, the pathogens enter the gut before the colostrum and

infections become established. Which antibodies are present in the colostrum can be affected by vaccination of the ewe. You should discuss with your veterinarian which vaccines would be the most appropriate for your farm. *Clostridium perfringens* is widespread in Ontario and this vaccine is commonly recommended. The vaccine will only be effective if a proper vaccine protocol for your farm is established.

### **THE FIRST 48 HOURS**

The lamb requires a warm clean area to spend the first few days of its life. The levels of clinical diarrhea are highest in accelerated lambing programs. Although these programs make sense from a management point of view they also put extreme pressure on the lambing area. Be sure to plan for sufficient space for the lambs and ewe to have a couple of days to bond and to improve the lamb's resistance to disease. These pens should be cleaned out and disinfected between uses. If space allows it, it is ideal to be able to leave a pen empty and dry for 24 hours between residents to eliminate pathogens. The type of disinfectant you need may vary from farm to farm based on your previous pathogen history, but formalin, Virkon or a quaternary ammonia product might be recommended. Lime is effective against some, but not all, organisms. Cryptosporidia is one of the leading causes of lamb diarrhea and is not killed by lime. Common but essential husbandry practices include dipping the navel with an iodine disinfectant, at least 2% but can go up to 7%. An empty film canister works for dipping (if you can still find one). Be sure the dip container is stored in a cool dark place and thoroughly clean at regular intervals so it does not become a source of infection. Also inject each lamb with vitamin E / selenium. Be sure to accurately weigh and dose animals with these products. Over dosing is common and the toxic effects can be more fatal than not dosing at all.

### **STRESS**

This is an often thrown around term in management circles. Almost every article you read states the animal should have a stress free environment, why? When an animal is under stress their body releases cortisol, a hormone inside the body that has a variety of effects. In this discussion the most important effect is the suppression of the immune system. We need the immune system of both the ewe and the lamb to be at a maximum. Healthy ewes don't get mastitis, which results in poor nutrition to the lambs, and they don't get pneumonia, which results in the ewes spreading organisms to the lambs. Healthy lambs run around more, nurse more often and start eating earlier. Stress can take one of two forms, physical and mental. The most obvious physical stresses include; overcrowding, damp bedding and poor ventilation. To evaluate these factors you need to get down to sheep level. The environment at 6 feet may not reflect that at 2 feet where the sheep are breathing. While down on your knees breathing, see if you can feel dampness seeping through your pant leg. It may look dry but if moisture is seeping through, the animals are sleeping in a wet environment. Mental stress may be harder to evaluate but just as important. Sit back and watch the herd. On paper there may be enough bunk space but if it is all in one area the dominant sheep may not allow submissive sheep to eat until they have eaten all the best feeds. If there is only one water bowl submissive sheep may only seldom get to drink and you can't produce milk if you are thirsty. Sheep hate changes in routine and loud noises. If your weekend help comes in and turns on loud rock music and handles animals differently than you do this will really upset the flock.

## **IN THE FACE OF A DIARRHEA OUTBREAK**

Sometimes, in spite of our best efforts at prevention, we will get cases of diarrhea. It is a problem if cases of diarrhea exceed 2% of the lambs. The single most important factor in stopping an outbreak of diarrhea is to establish the cause. Your veterinarian can be very helpful in getting a diagnosis. You may choose to have a farm visit or talk to your veterinarian about what type of samples they need to establish a diagnosis. Some tests can be done on feces right in the clinic while other must be done at an outside laboratory. The Animal Health Laboratory in Guelph processes food animal cases at a discounted rate and a proper diagnosis early on can prevent a lot of wasted time and medication treating the wrong disease. While waiting for a diagnosis there are a few simple steps that can be taken no matter what the cause. Immediately move your lambing area. Infectious organisms build up in the environment. Use gates or temporary walls but start in a fresh area. Keep affected lambs hydrated. Keep them with their mothers so they will nurse but supplement them with an oral electrolyte solution at a level of 10% of their body weight over 24 hours. This would mean that a 6.5 pound (3 kg) lamb would require 150 ml of electrolytes twice per day. Lambs are very susceptible to low blood sugar so with small ruminants we always suggest a high-energy electrolyte source. This is usually mixed up 2 litres at a time. Be sure to keep the remaining solution in the fridge so that organisms don't start to grow in it, we don't want it to become a source of further problems. Warm just the amount you need to feed at each meal. If you are supplementing fluids you must be very vigilant that all equipment for mixing and feeding is well sterilized. If an animal is weakened fighting one organism you don't want to introduce another. Once you have established a diagnosis you and your veterinarian can come up with an organized and effective treatment protocol. I hope this article has been helpful to you. Good luck with the upcoming arrivals.

### **Allyson MacDonald Bibliography**

Allyson graduated from the Ontario Veterinary College in 1988. Entering mixed practice with a speciality in dairy medicine, she gradually took on more small ruminant work. Over the last decade her specialty has been sheep and goat dairy medicine. Her primary concern is to maximize response to treatment based on a proper diagnosis and species appropriate therapy.