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Q1 Surveillance Summary

Clinical Impressions Survey

Practitioners surveyed in the first quarter of 2018 indicated that the top clinical issues in youngstock dealt with **lambing and kidding issues (stillbirths, congenital defects, born weak, hypoglycemia/hypothermia), pneumonia, neonatal diarrhea, septicemia, joint disease, coccidiosis and orf.**

The main clinical findings for adult sheep and goats were **abortion, pregnancy toxemia, mastitis, caseous lymphadenitis (CLA), pneumonia, polioencephalomalacia (neurologic disease frequently due to an altered thiamine status), pinkeye, and lice.**

Animal Health Laboratory Data

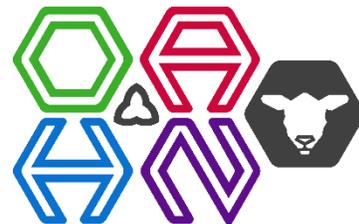
The following data highlights information from submissions to the provincial veterinary laboratory.

Sheep Cases: 53 full body postmortems (record high) and an additional 83 cases involving tissue samples.

RESPIRATORY ISSUES	REPRODUCTIVE ISSUES	OTHER
<ul style="list-style-type: none"> ▪ pneumonia cases slightly increased this quarter with <i>Mycoplasma ovipneumoniae</i> being most frequently isolated ▪ 1 case of lung abscessation due to <i>Corynebacterium pseudotuberculosis</i> (CLA) ▪ 1 case of pneumonia caused by lungworms 	<ul style="list-style-type: none"> ▪ abortion submissions were the highest since OAHN began in 2014 ▪ 6 cases <i>Toxoplasma gondii</i> ▪ 3 cases <i>Coxiella burnetii</i> (Q fever) ▪ 3 cases of Cache Valley virus ▪ 2 cases <i>Chlamydia abortus</i> ▪ 2 cases <i>Campylobacter</i> ▪ 2 cases due to <i>Salmonella</i> ▪ 2 cases due to <i>Yersinia pseudotuberculosis</i> 	<ul style="list-style-type: none"> ▪ 2 cases of copper toxicity ▪ 2 cases of polioencephalomalacia ▪ the number of positive maedi visna test results (2.6%) decreased from the last 2 quarters ▪ there were an unusually high number of <i>Salmonella</i> isolates (13 positive out of 35 samples tested)

Contact Us

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Goat Cases: 41 full body postmortems (record high) and an additional 59 cases involving tissue samples.

RESPIRATORY ISSUES	REPRODUCTIVE ISSUES	OTHER
<ul style="list-style-type: none">▪ <i>Mannheimia haemolytica</i> was most frequently isolated from pneumonia cases▪ 8 bacterial pneumonia	<ul style="list-style-type: none">▪ abortion submissions increased this quarter▪ 2 cases <i>Coxiella burnetii</i> (Q fever)▪ 2 cases <i>Toxoplasma gondii</i>▪ 1 case <i>Chlamydia abortus</i>▪ unusual number of cases with unknown cause likely due to maternal problems related to nutrition or other management factors	<ul style="list-style-type: none">▪ 5 cases of enterotoxemia▪ 2 cases <i>Listeria</i>▪ 10 positive Johne's test results▪ 6.4% of 2825 samples tested positive for CAE▪ 5 fecal samples positive for <i>Cryptosporidium</i>▪ coccidiosis testing similar to warmer months (9 of 14 cases positive)

REMINDERS

1. It is important that you inform your veterinarian when any individual disease occurs at a greater frequency than what you consider "normal" for your flock or herd. Call your veterinarian so that any testing can be as accurate as possible. The longer a carcass sits before being submitted, the lower the chance of a diagnosis.
2. It is important to keep placenta for veterinary review/sampling in any abortion case. Make sure the placenta is as clean as possible and keep somewhere cool and protected until your veterinarian arrives.

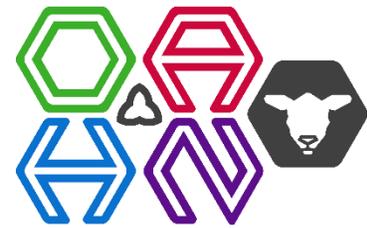
Case Report: Mortality in Lambs Caused by Liver Parasites

Dr. John Hancock, Dr. Andrew Brooks, Dr. Jan Shapiro, Dr. Murray Hazlett, Dr. Josepha DeLay, Dr. Margaret Stalker, Dr. Andrew Peregrine

Initial Problem: An Eastern Ontario sheep farm reported the sudden death of seven 10 month old ram lambs over a period of a week in late February. The owner considered grain overload as a possible diagnosis but thought it unlikely as there was no change in the feeding protocol. The owner performed preliminary on-farm postmortems and was concerned that the lungs showed abnormalities, being dark and congested. The owner was asked to bring the pluck and some of the intestinal loops of the most recent death to the veterinary clinic to facilitate a submission to the Animal Health Laboratory (AHL) for histopathology and bacterial culture.

Lab Testing and Next Steps Taken: Testing at the AHL revealed pneumonia with cultures of *Mycoplasma ovipneumoniae*. *Clostridium perfringens* type D was also isolated from the gut loop. Following these findings, vaccination of all the replacement animals against clostridial disease was initiated by the owner as the lambs had been vaccinated at weaning but never boosted. Following vaccination, no animals died in the next week, thus there was some thought that the outbreak had been controlled by vaccination.

More Cases: Another animal died, and a postmortem was performed by the flock veterinarian. Severe pneumonia with adhesions (lungs sticking to chest cavity due to inflammation) was found. There was also some blood in the bladder, and suspicion of bladder stones. By mid-March another few animals had died but were not available for postmortem examination. The next animal that died was submitted to the AHL for a complete postmortem and was diagnosed with severe pneumonia, with septicemia (bacteria in the blood). A week later,

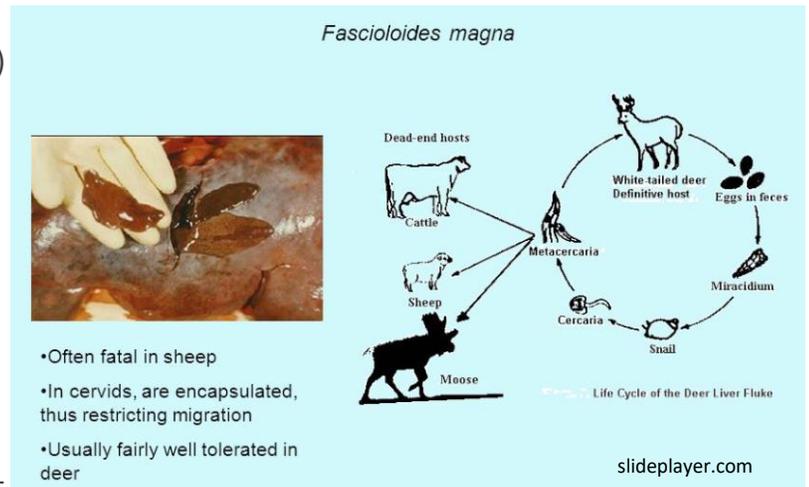


another 5 animals died and all were submitted to AHL - Kemptville for postmortem examination (some were sudden deaths and some had been treated with antibiotics). Based on the postmortem presentation of these 5 animals, there was some concern about the possibility of liver flukes.

Final Diagnosis: Extensive re-evaluation of all the livers by AHL pathologists revealed a portion of a large liver fluke that was submitted to parasitology and subsequently identified to be *Fascioloides magna*. Previous cases submitted to the AHL may have had *F. magna* as an underlying and predisposing cause of secondary bacterial septicemia that may have caused death. In the early stages of this case, the lesions in animals were less severe. The suspicion is that the migrating parasite was most likely a contributing factor in the death of most of the animals. The longer the parasite migrated and the animal survived, the more damage that was done and secondary bacteria of a wide variety were isolated from the systemic infections. It appears that *F. magna* was the underlying cause of mortality affecting the death of approximately 25 lambs in this flock.



What are Liver Flukes? *Fascioloides magna* is a large liver fluke (up to 10 cm in length, 1-2 cm wide) and primarily a parasite of cervids, particularly white-tailed deer. In deer the fluke resides in the liver in fluid-filled sacs and eggs eventually are excreted in the bile ducts, passing in the feces. Freshwater snails are intermediate hosts (middle men in the infection cycle) and pass immature stages that attach to grass and are consumed to complete the life cycle. The Ministry of Natural Resources and Forestry report that flukes are endemic in the white-tailed deer population of Eastern Ontario. The requirement of infected white-

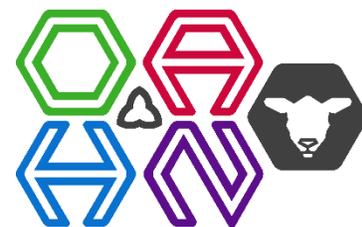


-tailed deer, freshwater snails and pasturing sheep at the correct stage probably enables this parasitic infection to be relatively rare in sheep or specific to certain areas in Ontario. The parasite can easily be missed, especially in a single animal with extensive adhesions located in the abdomen or chest cavity.

KEY TAKE AWAY: The conditions of excessive rainfall last summer resulting in water-logged areas of normally dry pasture, may have assisted the snail intermediate host. All animals on this farm were treated with closantel (Flukiver®, Elanco Animal Health), but it has limited value against immature flukes. The treatment of choice is triclabendazole (Fasinex), which is available by Emergency Drug Release from the UK. If your sheep have access to streams or fresh water sources, keep liver flukes on your list of possible diagnoses in sudden death cases. Sheep and goats are abnormal hosts of *F. magna*, meaning that the parasites migrate in the liver and other organs causing tremendous damage. Fluke eggs are not shed into the feces, and because of this, fecal examination for parasite eggs in the infected host is not helpful. It appears that all animals that are affected will die approximately 6 months after infection.

Thank You

Dr. Paula Menzies retired from OVC on March 1st after 35 years of teaching, research and service to small ruminant veterinarians and producers in Ontario and internationally. We want to thank Paula and wish her the best in this next stage of her career and life!



Case Report: An Abortion Storm in a Sheep Flock due to *Salmonella Oranienburg*

Dr. Kelly Haelzle and Dr. Paula Menzies

Initial Problem: This past late autumn and winter, an Ontario sheep flock with approximately 350 breeding ewes experienced unusual abortion and early fetal loss. The flock was purchased from another producer approximately 1.5 years previously and the only new additions were 2 rams from the same producer. The barn, newly constructed, also housed feeder cattle separated from the sheep by a suspended tarp. Diet was a TMR composed of corn silage, haylage and corn distiller's grain. Late gestation ewes were supplemented with additional grain. Prior to this, abortion was an uncommon event in this flock. The first group affected, mostly ewe lambs, were to start lambing aborted with half aborting 45-105 days gestation and the other half aborting between 105 days and full-term. The second group (2nd time lambers) due to start lambing mid-January had a lower abortion rate (~7%). However 30% of the third group, also 2nd time lambers, aborted, with most aborting 105 days to term. The owner commented that about one day before the ewes aborted, they would go off feed and appear depressed. Most ewes recovered a few days post-abortion.



Lab Testing: Specimens from abortions occurring in January and February were submitted to the AHL. Abortion due to *Chlamydia abortus*, *Campylobacter spp.* and *Coxiella burnetii* were ruled out. *Salmonella* was cultured from several fetuses. From one, *Salmonella arizonae* was cultured. This is considered a sheep-adapted pathogen and is occasionally implicated in ovine abortions^{1,2}. From two fetuses, *Salmonella Oranienburg* was cultured. To date, only one report in the literature could be found of *S. Oranienburg* being associated with an abortion problem³. Environmental sampling at this farm did identify the organism in the bedding of the lambs being artificially reared, suggesting that the lambs were excreting the bacteria – although no unusual disease was seen in this group. No cultures were taken from the cattle side of the barn.

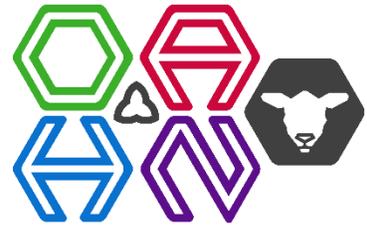
Other issues of note: The pregnant ewes were housed and fed outdoors in a dry lot with a covered feeder. The manure pile from the cattle feedlot was located in the same dry lot but separated by a fence. However, the owner noted that runoff from the manure pile may have reached the dry lot where the pregnant ewes were housed. The owner also noted that pigeons and sparrows were common in both barns and he was concerned about fecal contamination.

Treatment: The *Salmonella* isolate was very susceptible to antimicrobials, although treatment with injectable oxytetracycline didn't appear to change the course of disease.

KEY TAKE AWAY: *Salmonella* is an uncommon cause of ovine abortion here in Ontario but sporadic abortions can occur. *S. arizonae* has been implicated as a cause of ovine abortion in Canada as well as the UK. *S. Oranienburg* is more commonly associated with human illness from consumption of cantaloupes⁴, watermelons, raw milk dairy products, and eggs⁵. It is an important zoonotic disease causing significant gastrointestinal disease in people.

Welcome

The OAHN Small Ruminant Network would like to welcome Dr. Charlotte Winder to the network. Charlotte is a new faculty member in the Department of Population Medicine and a clinician in Ruminant Field Service.



Because the sheep will likely be shedding the bacterium both vaginally and in the feces, proper composting of manure before spreading it on crops is important.

¹ Long JR, Finley GG, Clark MH, Rehmtulla AJ. 1978. Ovine fetal infection due to *Salmonella arizonae*. *Can Vet J.* 19:260-263.

² Pritchard J. 1990. *Salmonella arizonae* in sheep. *Can Vet J.* 31:42.

³ Russell RR, Tannock GW. 1964. The isolation of *Salmonella oranienburg* from an ovine foetus in New Zealand. *NZ Vet J.* 12.

⁴ *Salmonella oranienburg*, Ontario. *Canada Communicable Disease Report.* Volume 24-22. Page F-1. 15 November 1998.

⁵ Multistate outbreak of *Salmonella Oranienburg* infections linked to Good Earth Egg Company shell eggs. *Centres for Disease Control.*

<https://www.cdc.gov/salmonella/oranienburg-10-16/index.html>

Managing the Risk of Malignant Catarrhal Fever (MCF) from Sheep to Bison/Elk/Deer or Cattle

Dr. Lynn Tait and Dr. Paula Menzies

As veterinarians or producers working with sheep, we are aware that MCF (caused by ovine herpesvirus-2) is a dramatic (and often fatal) but sporadic disease in cattle. Each year, the AHL periodically diagnoses MCF in bison, cattle and on rare occasions pigs, with most cases occurring in the fall and winter. In Ontario, there are many farms where cattle and sheep are found on the same property without incident of MCF. However, occasional problems do occur and it is important for producers to understand the risk and manage accordingly. In most cases, cattle and sheep can be raised together without any problems provided a few basic guidelines are followed:

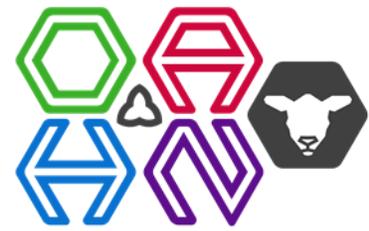
- Keep young lambs (weaning up to 10-11 months of age) away from cattle;
- Do not mix sheep and cattle during times of stress;
- Do not house sheep and cattle together indoors; and
- Do not pen sheep and cattle together in crowded conditions.¹



In areas where bison or farmed deer are reared, there have been tensions regarding the risk of OHV-2 being transmitted to susceptible species. Below is an excerpt from an email from Dr. Lynn Tait, OC Flock Management in Alberta on approaches to manage this risk to bison (reproduced with her permission):

Farmed bison are fairly common here in Alberta as well as sheep, and I would take the following approach to coexistence and good neighbourly relations.

- 1. Assume that ALL sheep can be non-clinical carriers of MCF.*
- 2. Sheep shed the virus mainly during periods of stress, such as lambing and weaning.*
- 3. MCF does NOT survive well in the environment (reports from hours to a couple of days under perfect conditions). Warm moist conditions are best for survival.*
- 4. Bison are EXTREMELY susceptible to MCF, followed by elk and then deer species.*



5. Bison are a dead end host and cannot transmit from bison to bison. Multiple deaths are the result of multiple contacts with the virus from the original source.
6. The bison get infected by direct contact with the virus, not generally by a vector like insects.
7. People can carry the virus on clothing, equipment and trailers and should practice good sanitation and biosecurity if involved in both species.

If they are going to be neighbours, I would suggest that they graze mature sheep without lambs at foot and pay close attention to drainage and water movement through the properties. Bison should not be downhill in wet conditions or downstream of sheep to prevent any virus moving in the water to the bison. Bison should never be in close proximity to lambing or sheep gathering yards. There should be no direct contact like pasture fencelines and at least a 10-foot (3 meters) buffer zone on a shared fenceline. (Increasing the distance between sheep and bison reduces the risk. However, there is still no definitive science on what is considered a minimum safe distance. Airborne virus spread is less of a risk for cattle.¹) We have a lot of wildlife movement here and this does not seem to present an increased risk.

In Alberta, the sheep were generally here first and Bison farmers came along and wanted the sheep gone (not likely to happen), so we found acceptable ways to manage risk. I personally had sheep and bison on adjoining properties for many years without incident following the above recommendations as well as limiting bison contact with people and equipment involved in the sheep operation, especially during lambing.

Testing to detect ovine herpesvirus-2 can be performed on blood, liver, kidney, or brain. Open discussion between neighbors and with their veterinarians to develop a low-risk management plan will go a long way to preventing problems in the future, especially in more densely populated areas.

For more information on MCF, please visit the following website:

<https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/livestock/animal-health-and-welfare/malignant-catarrhal-fever>

¹Wilkins W. Malignant catarrhal fever. Saskatchewan Ministry of Agriculture. <https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/livestock/animal-health-and-welfare/malignant-catarrhal-fever>

There is Still Time to Take Advantage of the Adult Small Ruminant Mortality Project!

All the case reports noted in the report this quarter were enhanced by involving the veterinarian, and performing diagnostic tests. The adult mortality project allows producers to access postmortems and associated lab testing for their herd/flock at minimal cost (cost of the call fee). We have room for 80 additional cases, and **these cases must be completed before July 31, 2018** when the project ends. If you have adult sheep or goats >1 year of age that have either died recently (<12 hours) or are euthanized due to illness, call your vet right away to access the program.