



*The WeCAHN small ruminants network met May 23rd 2024 with veterinary practitioners, producers, provincial veterinarians, diagnosticians, and researchers in attendance, discussing the small ruminant health events of Q1 (January—March) 2024.*

### Data sources in this report include:

- Clinical Impressions Surveys completed by network practitioners.
- Data shared by western veterinary diagnostic laboratories: Manitoba Veterinary Services Diagnostic Laboratory (VDL), Prairie Diagnostic Services (PDS), and University of Calgary College of Veterinary Medicine Diagnostic Services Unit (UCVM DSU).

### Case report: Neonatal goats with neurological signs in Minnesota

The goats on a backyard premises shared the same pasture and sole water source with infected ducks and chickens. The goats began to kid only days after the birds were depopulated. Of 10 goat kids that have died, ranging from 5 days to 9 days of age, five goat kids between 7 and 9 days of age have tested positive on brain and other tissues for H5N1 clade 2.3.4.4b virus. Sequencing showed that isolates from the first goat and infected poultry were highly related.

Influenza researchers stress that influenza viruses frequently are found across multiple species, so the recent detection of H5N1 in goats is noteworthy but not especially surprising.



### Relevant observations from H5N1 outbreak in US dairy cattle:

The USDA's working hypothesis is that the virus circulating in U.S. dairy cows reflects one spillover event from wild birds followed by transmission within and between herds which is largely due to human activity, i.e. transmission within herds based on activities such as milking, and between herds due to transport of infected animals.

Current understanding based on sequencing data and phylogenetic analysis is that although early clinical cases in Texas dairy herds began to be discussed among veterinarians in mid-late February, initially as "mystery agalactia" prior to H5N1 detection in clinical cases, the virus was likely circulating in US dairy cattle for months prior, based on the level of genetic diversity across isolates.

This further suggests questions regarding what if any clinical signs were present in these early cases of bovine infection, and how many months' worth of sampling are missing from the current library of isolates.

**Likely the main takeaway from the dairy outbreak isolates' sequencing data is that the strains circulating in U.S. cows and one goat flock identified to date are significantly different genetically, suggesting no meaningful link between the two species' outbreaks.**

In Canada the occurrence of H5N1 in ANY species is federally reportable disease, so if a western veterinary practitioner sees a suspect H5N1 case in goats, they are expected to contact their district CFIA office, who will discuss whether/how to proceed with testing. Index of suspicion would be increased by the presence of unexplained deaths/neurological signs in neonatal goats plus the presence of dead poultry/wild birds infected with H5N1, on-farm.

Veterinarians and producers considering testing are reminded that CFIA response action may vary with host species.

## Digestive system

(For purposes of the clinical impressions surveys, Rarely = 1-2 times from January - March 2024 Commonly= 1-2 times per month; Very frequently = 3+ times per month).

Network practitioners reported digestive disease never to Rarely. Diarrhea in pre-weaning lambs was reported Rarely by network practitioners with diarrhea attributed to coccidia rated **Increasing**. Similarly dysentery was reported associated with coccidia. Rarely but rated **Increasing** by one practitioner. In both cases this was reported in pre-weaning lambs.

One practice reported an increase in clinical coccidiosis associated with both diarrhea and dysentery, in pre-weaning lambs. These had a heavy load of coccidial shedding which was easily diagnosed at the clinic, and were associated with increased rain/wet conditions on-farm. Treatment was successful, with fluids/sulfa's or Amprol™ in older lambs headed for pasture.



## Case report: Stomach infection in 30 day old ewe lamb

### Post-mortem

- Overall pale carcass suggested anemia (low blood count) and the dark contents within the intestinal tract suggest the animal was bleeding into the gastrointestinal tract.
- Clear fluid in the lungs. No gross evidence of parasitism (e.g. Haemonchus “barber pole worm”).
- Samples of gastrointestinal tract were tested for Clostridial testing.
- **The most significant finding in this lamb was the mild inflammation of the abomasum (fourth stomach) with gas in the stomach wall and the presence of *Sarcina* spp. bacteria within the stomach. *E. coli* bacteria producing the eae toxin were also cultured.**

This bacterium has been associated with bloat and ulceration in both calves and lambs. They don't tend to invade the stomach wall but rather sit on the inner surface.

In our lab, we have seen previous outbreaks of bloat, colic and twisted intestines in lambs around this age in the spring that we believe are associated with this bacteria.

### Final comments from pathologist:

“*E. coli*: eae positive (attaching and effacing gene).

Attaching and effacing *E. coli* could lead to increased intestinal movements thus increasing the risk of twisted gut.

In addition, we have seen 'outbreaks' of twisted gut associated with gas production by *Sarcina* spp.

**QUESTION:** how frequently would you expect to see fourth stomach (abomasum) infections in lambs?

### ANSWER:

- Either Clostridial or toxin-producing *E. coli* - once in awhile; not common at our lab.
- Haven't [personally] seen this presentation (*E. coli* with *Sarcina* bacteria in 30-day-old) before [in lambs] but see *Sarcina* bacteria commonly in calves in the UK. It's typically associated with gut bacteria upset resulting from feeding errors in calves fed artificial milk (+/- clostridial involvement). It's a multifactorial disease. Clostridial stomach infections in lambs more commonly seen. We also see *Mannheimia*- associated abomasitis in lambs, both younger (1-2 weeks) and older (3-4months) .

## Stomach infections continued

- Neither are common at our lab. We do see *Sarcina*-associated stomach infections. There are also reports of *E. coli* eae-associated stomach infections in calves. These pathogens are not generally proven to be causally associated with pathology, and if they were, would not be a contagious disease, but a sporadic one with underlying predisposing factors.
- Our practice sees *E. coli*-associated stomach infections in pasture-age lambs, associated with clostridial infection, i.e. *Clostridia perfringens* type A. These flocks respond well to clostridial booster (*C. perfringens* type A). It is a multifactorial disease, and may involve feeding problems in confined flocks. Indoor-raised lambs may be exposed to poor feeding regimes and/or wet litter. Now in the absence of availability of *C. perfringens* A vaccine our clients see more of these problems.

## Internal parasites

Coccidia were reported Rarely, and rated Increasing by one practitioner, seen in pre-weaning lambs. Strongyles were reported never to Rarely and seen in all classes of livestock. Both classes of parasites were associated with treatment failure.

## External parasites

Mange and lice were reported Rarely in breeding flocks, by one practitioner, and rated Stable.

## Reproductive disease

Reproductive disease was reported Rarely by practitioners, with abortions never to Rarely, and acute mastitis never to Rarely.

Abortion associated with *Chlamydia* was reported decreasing by one practitioner, and this was attributed to uptake of *Chlamydia* vaccination. One case each of *Chlamydophilus* and *Coxiella* (Q fever) were reported in sheep at PDS.

Two cases of abortion in sheep (one also associated with metritis) from which *E. coli* was the only significant finding were reported from UCVN DSU.

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## Case report: Neospora abortion

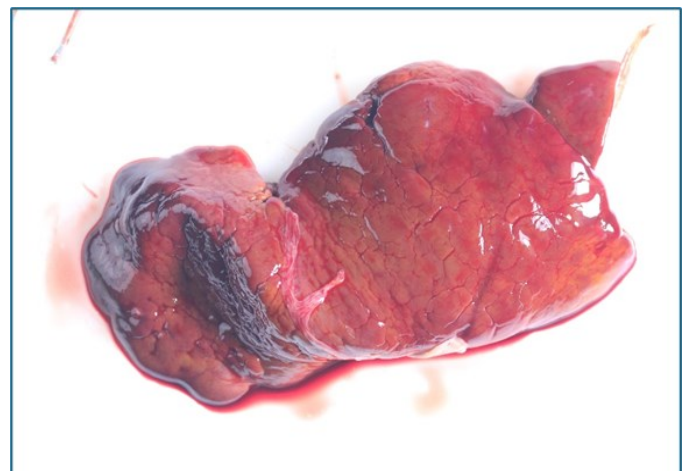
**Submitted to lab:** Placenta, one section yellow and opaque containing 6 cm long mummified foetus.

- Rest of placenta, contained body of a 23-week gestation female ovine fetus in good nutritional condition.



Credit: Dr. Dana Goldsmith, UCVN Diagnostic Services Unit

- Hemorrhages in muscle and subcutaneous tissue.
- Numerous irregular cracks/malformations along the liver surface.



Credit: Dr. Dana Goldsmith, UCVN Diagnostic Services Unit

- Severe hydrocephalus fluid on the brain.

### Neospora abortion notes:

- Dogs are the definitive host for this protozoan (single celled) parasite and they shed Neospora oocysts (eggs) in their feces after eating infected animals.
- Sheep , goats and cattle then eat the eggs and become infected.
- **It's important to restrict dog access to live-stock feed and also to dead animals.**
- There is no antimicrobial or drug treatment for Neospora, and no vaccine is available.

### Case report: *E. coli* abortion

- **Submitted to lab:** Four aborted near term lambs were submitted to University of Calgary DSU.
- The microscopic changes looked like they could be due to a bacterial cause of fetal death.
- **Post mortem findings:**
  - inflammation in the placenta,
  - pneumonia in 2 lambs and
  - pinkeye in 2 lambs.
- **Bacterial culture:**
- *E. coli* bacteria in the lung, stomach fluid and placenta,
- Gram stains (special dye making the bacteria visible when examined with a microscope) were done on the fetal tissue and placenta.

### *E. coli* abortion continued:

- The Gram stain revealed bacteria associated with the microscopic signs of disease identified in the lungs and placenta which further supports the causative agent to be *E. coli* .

### *E. coli* abortion notes:

- *E.coli* bacteria live in the intestinal tract of healthy animals
- In some situations *E. coli* bacteria are capable of causing disease, especially if they have special disease-producing factors such as special toxins.
- While abortions due to *E. coli* are not common, WeCAHN has reported on several outbreaks of *E. coli* abortions in sheep and cattle over the past year.
- Your veterinarian will investigate to identify *E. coli* control measures specific for your farm.



## Research project: Caseous lymphadenitis testing

**Why:** At present there are no commercially available serologic tests for CL in Canada. Flocks/herds testing for CL must ship samples to the US, which is prohibitively expensive. To make CL testing more accessible for Canadian sheep and goats, the Animal Health Centre has brought in a test for CL and needs your help validating it. To do this, we need serum samples from sheep and goats, particularly those that may be positive for CL.

**What:** Serum samples from Canadian sheep and goats can be submitted to the Animal Health Centre in Abbotsford. They will be tested in-house and the samples submitted to California-Davis for confirmatory testing at no-charge to the submitter, who will be provided with results. We are particularly interested in positive samples. Samples from vaccinated herds/flocks are welcome (please indicate roughly when they were vaccinated on the submission form).

**When:** This is a limited-time offer starting May 1, 2024 until we receive at least 200 samples (perhaps more depending on the number of samples that are positive).

**How:** Collect or work with your veterinarian to collect serum samples and send them to the Animal Health Centre at 1767 Angus Campbell Rd. Abbotsford BC along with a submission form available at [https://www2.gov.bc.ca/assets/gov/farming-naturalresources-and-industry/agriculture-and-seafood/animal-and-crops/animalhealth/ahc\\_mammalian\\_submission\\_form\\_fqm-012m-04.pdf](https://www2.gov.bc.ca/assets/gov/farming-naturalresources-and-industry/agriculture-and-seafood/animal-and-crops/animalhealth/ahc_mammalian_submission_form_fqm-012m-04.pdf).

If you have further questions please contact the Animal Health Centre at [PAHB@gov.bc.ca](mailto:PAHB@gov.bc.ca).

Thanks to Dr. Glenna McGregor at AHC for sharing this project information with us.



### Meeting Takeaways

- Producers observing potential suspect cases of Avian Influenza H5N1 in goats (unexplained deaths/neurological signs in neonatal goats, with accompanying potential contact with dead birds, especially H5N1 positive), should contact their veterinarians. The list of ruleouts includes both bacterial and viral infections which would require different control measures.
- The different causes of abortion reported (*E. coli*, *Neospora*) have different risk factors and require different control measures, underlining the value of abortion diagnostics.