



## INTRODUCTION:

### *Participants attending the meeting:*

The videoconference meeting of the WeCAHN small ruminant network was held Dec. 8, 2022.

Participants attending the meeting: veterinary practitioners, laboratory diagnosticians, veterinary college faculty, and industry representatives.

## Report Contents:

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## 1. Dataset Overview:

### i. Practitioners' Clinical Impressions Survey

ii. **Laboratory data:** Manitoba Veterinary Diagnostic Services Laboratory, Prairie Diagnostic Services (PDS), University of Calgary Diagnostic Services Unit (UCVM DSU).

### Clinical Impressions Survey and Laboratory Data:

The clinical impressions survey is intended to be a simple, quick overview of diagnoses by practitioners, which does not require practitioners to extract data from their information management systems to complete.

Network practitioners report, for a list of selected pathogens/syndromes how frequently they have diagnosed these pathogens over the time period in question. Additionally, they are asked whether, compared to the previous time period, their diagnosis of these pathogens is increasing/decreasing/ or stable. For each category of disease, clinical impressions survey findings are followed by relevant laboratory data.

## 2. Interesting Cases

1. **Copper poisoning – 3.5 year old ewe from petting zoo, suspicion fed inappropriate diet [containing too much copper].**

**QUESTION:** How frequently do you see this?

### ANSWERS:

- a) May see problems even with a ration intended for sheep:
  - Mixing errors e.g. flock experienced problems associated with loose mineral containing mixing error which happened at the mill- but would've been a problem even without the mineral due to the natural forage content, which was too high in copper for sheep.
  - Problems with flushing [ie cleaning the system between batches] properly between mixing runs at feed mill. Consequently, now some AB mills won't sell sheep rations. [If flushing isn't done properly, trace amounts of the last ration mixed may be present in the next one. If the last ration mixed was a cattle ration with higher levels of copper than sheep can tolerate, this can be a problem].
  - Can be problem in AB grains grown on land where pig manure used due to high supplementation of pigs with copper; especially in animals on high concentrate intake e.g. milking sheep, since they will be eating relatively more grain for their weight.
- b) May see inappropriate rations selected and fed due to owner ignorance about hazards of using rations intended for other species such as cattle.

**RECOMMENDATION:** If multiple species are kept in one pen, choose a sheep ration to feed to everyone, since the other animals will be ok on a sheep ration. Sheep may not be ok on a horse or cattle ration.

## Interesting Cases, continued:

**BC:** We see a small number of cases [of copper poisoning in sheep] annually.

Dr MacGregor [AHC Abbotsford] does periodic workshops for small ruminant producers, since the AHC sees so many preventable diseases in their small ruminant caseload.

- The binder given out at the workshop is available at: [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agriservicebc/webinars/sheep\\_and\\_goat\\_manual.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agriservicebc/webinars/sheep_and_goat_manual.pdf)

- Some virtual short talks the BC Ministry of Agriculture has offered on common flock health problems are available at: <https://www.bcgoat.ca/goat-resources.htm>

### 2. Flock problem – 3 month old lambs with weight loss, pneumonia, *Haemonchus contortus* (stomach worm).

- Generally some large multi-state US National Animal Health Monitoring System (NAHMS) surveys found high uptake of herd-level deworming, at least once annually, with greater uptake as well as greater parasite-related mortality in goats, vs sheep. A good source of deworming information is available at: <http://bit.ly/3HBneZO>

- Discussion consensus was that uptake of both clostridial vaccines to prevent enterotoxemia, and rational deworming protocols, could be improved. The pathology labs report frequently identifying cases of sheep and goat mortality preventable by these basic good management practices.

### 3. Flock problem: 6-month ram lambs with enzootic ataxia (aka swayback, a neurological disorder associated with copper deficiency), emaciation and pneumonia.

**Q:** How frequently do you see this kind of basic nutritional problem in your clients' flocks?

**COMMENT:** In BC we see starvation as the third most common cause of death, in 2021, resulting from ignorance, poor advice, and keeping mixed species together (where young lambs don't compete well for feed).

**COMMENT:** We also see this in AB! We see 5-6-month lambs still on pasture with ewes, exposed to an increasing burden of parasites as the summer-fall progress, on forage of declining quality and nutritional value.

**COMMENT:** One problem is lack of availability of nutritionists interested in sheep. We have had clients with large operations who had problems even finding a nutritionist, and small clients are frequently getting advice from sources such as farm supply stores, who are often not qualified to give nutritional advice.

### 4. *Bibersteinia trehalosi* (bacterium) causing blood poisoning in lambs on pasture after turnout:

**Q:** Is this timing (after pasture turnout) unusual?

**ANSWER:** Some researchers relate problems with *Bibersteinia* to changes in the normal bacteria and health of the gut. So the timing of clinical disease shortly after ration change could fit with that. In our practice we have seen it associated with antimicrobial feeding [for another problem] as well, which again likely changed the composition of normal gut bacteria.

### 5. Lambs born with crooked legs- reported by clients, submitting for further examination:

**Q:** Are these cases of arthrogryposis [specific birth defect which can be associated with some viral infections]?

**A:** Have not seen them yet since contact with owner has so far been by phone, but suspect they are.

**COMMENT:** I saw crooked legs in a Finn flock lambing in confinement so no direct sunlight. We saw leg problems not apparent at birth but developing in bottled lambs. Switching milk replacer [presumably improving vitamin A and D status] resolved the problem.

### 6. *Salmonella* in neonatal lamb in MB:

Case: was a down and scouring neonatal lamb.

This type of *Salmonella* is noteworthy since associated with multidrug resistance, and like all *Salmonella*, it can also infect humans.



## 3. Respiratory System

- Respiratory disease was reported Rarely to Very Frequently by network practitioners.
- Generally, the lab data for various potential pneumonia pathogens appear Stable across a small number of submissions, with the exception of *Mannheimia haemolytica* bacteria isolations in Manitoba, which appear to be declining across a relatively small number of overall submissions for both sheep and goats.

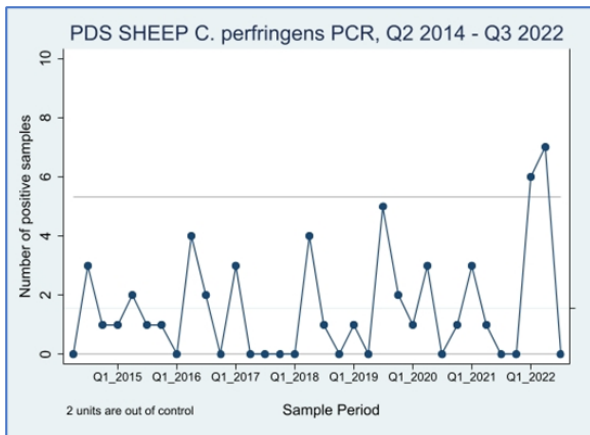
## 4. Digestive System

- Digestive disease was reported Rarely (N = 2) to Very frequently (N = 1).
- Diarrhea associated with *E. coli* was reported Very frequently by one practitioner, and Cryptosporidia Commonly.
- UCVM reported three cases of *Hemonchus contortus* (stomach worms) in lambs; one was also associated with *Mannheimia haemolytica* respiratory infection.

### Entero-toxemia associated with Clostridial bacteria infection

Recap on ‘control charts’: For each of the following graphs, each data point reflects the number of positive samples or cases reported, over a 3 month period. The upper and lower horizontal lines, called control limits, are similar to statistical confidence intervals. Control charts are a simple way of presenting data collected over time. Apparent trends (e.g. increasing or decreasing frequencies of detection) over time, or individual points lying outside the control limits, suggest a need for more investigation.

- After a slight uptick in *Clostridium perfringens* (bacteria associated with entero-toxemia (aka



pulpy kidney disease in lambs and kids) detections at PDS, last quarter, there were no detections in Q3 (July – September) of 2022. This bacterium is only intermittently detected in small ruminants at Manitoba VSDL.



### Summary of enterotoxemia-associated mortality, and Clostridial vaccination, reported in U.S. National Animal Health Monitoring System (NAHMS) sheep and goat studies.

Sector	Overall annual mortality	Enterotoxemia Deaths as % of all Mortality	Herd/flock level clostridial vaccine uptake
Sheep <sup>1,2</sup>			
Lambs	11.2%	6.2%	<i>Clostridium perfringens</i> types C and D 60.5% Tetanus 64.5%
Ewes	5%	2.2%	
Goats <sup>2</sup>			
Kids	20%	22%	<i>Clostridium perfringens</i> types C and D 89.5% Tetanus 86.6%
Does	10%	30%	

<sup>1</sup> Sheep and Lamb Death Loss in the United States, 2011 Retrieved from [https://www.aphis.usda.gov/animal\\_health/nahms/sheep/downloads/sheep11/Sheep11\\_is\\_Vaccination\\_1.pdf](https://www.aphis.usda.gov/animal_health/nahms/sheep/downloads/sheep11/Sheep11_is_Vaccination_1.pdf)

<sup>2</sup> Vaccination Practices on U.S. Sheep Operations, 2011 Retrieved from [https://www.aphis.usda.gov/animal\\_health/nahms/sheep/downloads/sheep11/Sheep11\\_is\\_Vaccination\\_1.pdf](https://www.aphis.usda.gov/animal_health/nahms/sheep/downloads/sheep11/Sheep11_is_Vaccination_1.pdf)

<sup>3</sup> Goat 2009 Part III: Biosecurity and Disease-prevention Practices on U.S. Goat Operations, 2009. Retrieved from: [https://www.aphis.usda.gov/animal\\_health/nahms/goats/downloads/goat09/Goat09\\_dr\\_PartIIIa.pdf](https://www.aphis.usda.gov/animal_health/nahms/goats/downloads/goat09/Goat09_dr_PartIIIa.pdf)

- Usage of Clostridial vaccines was reported higher in goat herds than sheep flocks, presumably reflecting the greater susceptibility of goats to entero-toxemia.

**Q:** How frequently do you see this as cause of mortality, and how widespread is vaccination?

**A:** Definitely room for improvement in vaccine uptake, similar to what is reported in recent BCRC-funded survey of beef cattle vaccine uptake.

#### COMMENTS:

- Concerned that since acquiring this vaccine will now require purchase from a veterinarian, that this will reduce number of producers vaccinating.
- When veterinarians/producers have Clostridial problems they need to confirm that the agent causing the problem is covered in the vaccine selected.

Digestive System continued:

Johne's disease (*Mycobacterium avium paratuberculosis* or MAP):

- At PDS there are consistently a greater number of *Mycobacterium avium paratuberculosis* (MAP) detections in goats relative to sheep.
- Both PCR (detecting the presence of bacterial DNA) and serological (detecting antibodies, suggesting previous exposure to the bacterium) positives are trending up in goats at PDS over time.



5. Reproductive System

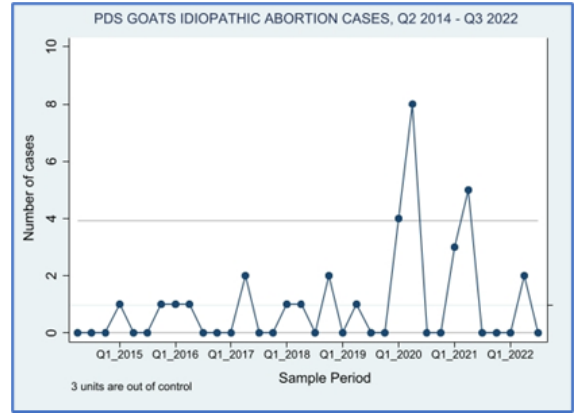
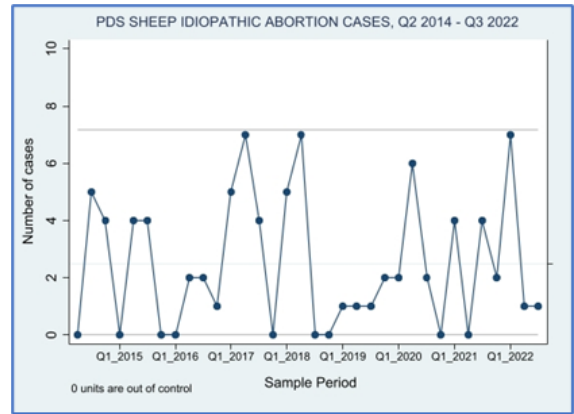
- Reproductive disease was reported Rarely (N = 2) to Commonly (N = 1) by network practitioners in Q3 2022.
- Abortions were reported Very frequently by one practitioner.
- Infectious causes of abortion diagnosed by PCR, appeared for Stable for sheep and goats in Q3.
- Sheep and goat abortions reported from pathology submissions, for which no cause was determined, remained Stable in Q2 at PDS.

**Q:** The most recent NAHMS surveys reported ~ 2 of 5 flocks/herds had at least one abortion over the past year. Does this seem high?

**A:** If we are dealing mostly with large flocks, having good records, they will recognize the occasional individual abortion, but virtually never see outbreaks/abortion storms.

**RECOMMENDATIONS:**

- We advise our clients to store the first two abortions observed and if/when they see a third, submit all to the lab. This is especially important to small flocks in which a 2% abortion threshold may not be very helpful given small overall number of animals.
- Control: Some producers want to feed tetracyclines as preventive measure. However, they tend to find that in the absence of this, rate of abortions does not change much. *Chlamydia* (which tend to be sensitive to tetracycline) certainly is present in some of our flocks but maybe not the scope of problem people think it is.



- A decision tree for handling and submitting aborted fetuses for diagnostics was developed by the network and is available here: <http://bit.ly/3V1d07W>

**Q: How did pregnancy diagnosis go this year?**

**AB:** For producers lambing in January, breeding happened on pasture and conception rates were reasonably good this year due to spring rains and pasture quality. In contrast, in our practice last year, conception rates on poorer pastures were lower. However the majority of scanning starts now, for flocks lambing later.

**BC:** Generally we saw no change in conceptions relative to last year; bit of increase in parasitism later in the summer as result of wet June. If producers didn't de-worm, this resulted in losses.

**Ram exams:** despite the value to producers, most of the exams we do are for sales and happen in May [i.e. long in advance of breeding season].

6. Congenital Diseases

- Congenital disease was diagnosed Never to Commonly by network practitioners in Q3 2022, with arthrogryposis (contracted joints) and hernias the most frequently reported conditions (Rarely, by one practitioner).
- A reminder that one case discussed by practitioners of leg problems in very young lambs eventually was associated with milk replacer problems, and was not in fact an actual birth defect.

## 7. Multi-systemic Diseases

- Multi-systemic disease: was reported Never to Commonly, with anemia (low blood count, caseous lymphadenitis, nutritional deficiencies, and toxicities (poisonings) all reported Commonly by one practitioner.
- A case of **caseous lymphadenitis** was also reported in a yearling doe by UCVM, as were **two cases of copper deficiency in rams**, and **one case of copper poisoning** associated with inappropriate diet in a 3 ½ year old ewe in a petting zoo.

### WeCAHN contact info:



<http://wecahn.ca>



**Dairy network online:**

<https://wecahn.ca/wecahn-networks/dairy-network>



**@WesternCanAHN**



<https://www.linkedin.com/company/western-canadian-animal-health-network-surveillance/>



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## 8. Meeting Take-aways

1. **Basics matter!** Problems with stomach worms or entero-toxemia come from lack of basic good management procedures de-worming and vaccinating. Your veterinarian can help you set up a herd or flock health program to avoid these problems.
2. **Diagnostics matter too.** If you find an aborted fetus, it's important to safely collect and freeze it ( Instructions can be found here: <http://bit.ly/3V1d07W> ). If/ when you find a third fetus within a year, your veterinarian will submit them to the lab for diagnosis (unless their own specific protocol is different). Infectious abortion in sheep and goats is common, and many causes can be prevented by vaccination.

