



INTRODUCTION:

The videoconference meeting of the WeCAHN dairy network was held Nov. 24 2022.

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

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1. Dataset Overview:

- i. Interesting cases
- ii. Clinical impressions survey
- iii. Laboratory data: UCVM Diagnostic Services Unit (DSU); Prairie Diagnostic Services (PDS); Manitoba Veterinary Diagnostic Services Laboratory
- iv. Scan: Promed

Clinical Impressions Survey and Laboratory Data:

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

1. Neonatal Holstein calves with fatal intestinal laceration:

- Tearing of small intestine of a newborn calf that appears to have been cause by an abnormal navel structure. Calf was born normally and drank well. Twelve hrs later depressed and dead 24 hrs later. Intestine had ruptured and leaked into abdomen.
- Clinical signs:
 - Born alive, drink milk
 - Tend to die within 24 hours
 - At post-mortem: intestine has ruptured
 - Associated with abnormal navel structure

Q: Have others seen or heard of this?

A: Practitioner and Pathologist: have not.

COMMENT: Will make more of a point of post-mortem'ing very young calf deaths to see if it's happening in our practice!

2. Pinkeye in lactating cows:

In our practice this has been enough of a problem over past couple of years, associated with weather favourable to the agent, that we are working on autogenous (custom-made) vaccines for problem herds, starting first in calves and dry cows.

Interesting or Unusual Cases continued:

3. Liver flukes in a dry cow in Manitoba

Background:

- Eastern half of province may see *Fasciola gigantica*, carried by wild deer, and may see in cattle especially if in wet (i.e. snail-friendly) environment.
- Cattle occasionally also develop associated clostridial infections due to liver damage from the flukes.
- Clinical disease associated with flukes is more severe in small ruminants where the flukes are less localized and cause more widespread liver damage.
- Veterinary clinics within the affected part of the province may establish clinic-based (as opposed to case-based) permits to import a fluke treatment (Fasinex™).

COMMENT: We do see liver flukes (also *F. gigantica*) in adult beef cattle in foothills of Rockies and also other counties [in Alberta]. We too also see clostridial infections in some animals with flukes.

4. Injuries:

- We have seen some traumatic claw injuries and some injuries due to manure scraper that fortunately are not common, but when they occur are a significant source of lameness.

5. IBR outbreak associated with udder and teat skin irritation:

- Herd had lapsed on vaccination protocol.
- Broke with IBR: clinical signs included drop in milk production, fevers, red eyes, no increased lung sounds. There were 2 abortions at this time as well.
- Before and during the above clinical signs: red inflamed skin on udder which crawled down to red and inflamed teats.
- Follow up: vaccinated with an intra-nasal vaccine which included IBR.
- Skin problem was much decreased in 10-11 days; production back to normal in 16-17 days.

PATHOLOGIST'S COMMENT: On the IBR udder lesions. I have not seen that before. There is another herpes virus, bovine herpes virus 2, that causes ulcerative mammillitis, (which I also haven't seen).

PRACTITIONER'S COMMENT: I have seen bovine herpes virus 2 lesions on teats/udders before and this was different. Those are much more, seemingly, painful to the touch/milking.

6. Giardia diarrhea in calves housed indoors:

- This is a single-celled protozoan parasite similar to cryptosporidia, and is somewhat unusual to find causing disease by itself (without help from another pathogen).
- Giardia and Cryptosporidium shedding in young dairy heifers was studied in the last NAHMS US dairy survey in 2014 survey. Frequency of Giardia shedding in healthy heifers was ~ 30%.

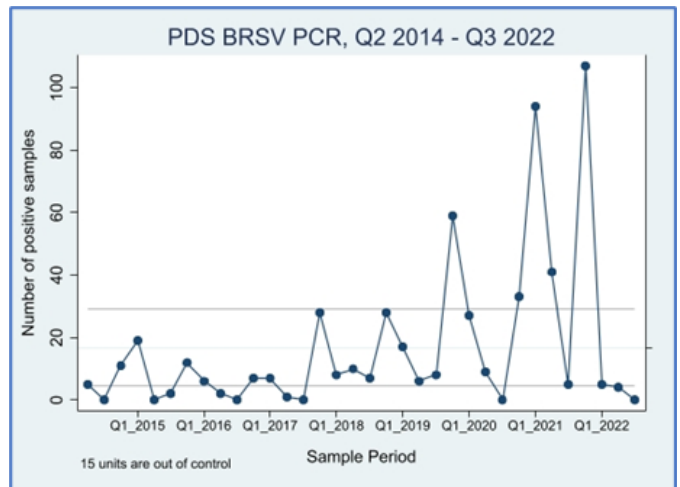


3. Respiratory System

- Respiratory disease was reported Commonly by network practitioners, with broncho-pneumonia and un-differentiated pneumonia the most frequently reported syndromes.
- Detections for BRSV assay also broadly trended up at PDS over the past 5 years although down the past couple of quarters, driven by submission trends, with proportion of samples positive relatively stable over time.

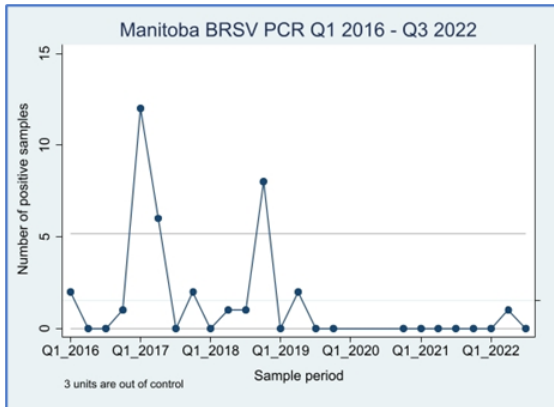
Recap on 'control charts': For each of the following graphs, each data point reflects the number of positive samples or cases reported, over a 3 month period. The upper and lower horizontal lines, called control limits, are similar to statistical confidence intervals.

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 investigation to determine whether/how significant a signal they represent.



Respiratory System continued:

- Detections for BRSV assay also broadly trended up at PDS over the past 5 years although down the past couple of quarters, driven by submission trends, with proportion of samples positive relatively stable over time.



- In contrast, BRSV detections at Manitoba continued stable.

Discussion of practitioner use of IN vaccines in calves, and specifically interest in BRSV component, to help understand lab data suggesting a longer-term trend to increasing infections.

Use in our practices:

PRACTICE 1:

- Has increased over the past 5-6 yr:
- We were seeing ultrasound evidence of lung damage in calves as early as 2-3 weeks of age in un-vaccinated herds.
- Mostly we are interested in IBR, BVD and especially in BRSV. We think it's associated with calf pneumonia more than we thought.
- Results: it seems to prevent lung damage

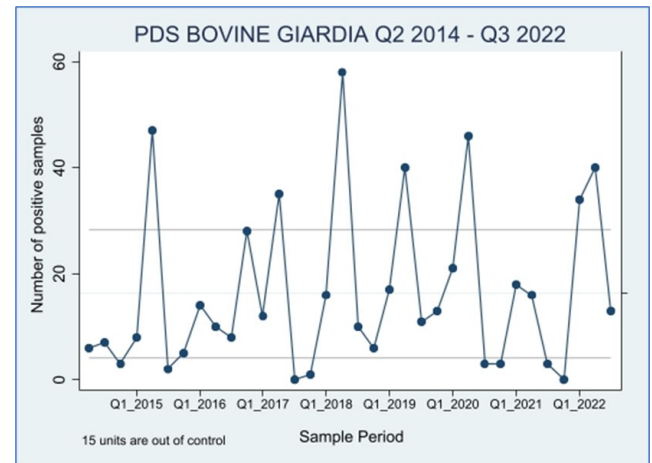
PRACTICE 2:

- In our practice we tend to see calf pneumonia as *Mannheimia* at 3-4 weeks of age. For that reason we have started using intra-nasal vaccines which also have bacterial targets.

4. Digestive System



- Digestive disease was reported Rarely to Commonly to Very frequently by network practitioners.
- Diarrhea was reported Commonly to Very frequently, and seen Commonly associated with *E. coli* (N = 1) and with Rotavirus by three practitioners. Diarrhea was less frequently associated with Coronavirus and Cryptosporidia spp. by network practitioners this quarter.
- For Manitoba the laboratory data for Rotavirus detections show a trend of increasing detections over time.
- Follow-up to the case report of Giardia diarrhea in calves: In lab submissions to PDS, Giardia is included in the “diarrhea panel” which is a group of tests for several diarrhea pathogens. It is fairly regularly identified in lab submissions, and seems to have a seasonal trend, but not a significant longer-term trend, over time.



Digestive System continued:

Overview of National Animal Health Monitoring System (NAHMS) survey:

- Present in 30% of healthy U.S. pre-weaned dairy heifer calves sampled.
- Associated with reduced ADG.
- More likely to be found in calves more than 2 weeks old, who experienced failure of passive transfer, and originated from smaller farms.

Retrieved from: https://www.aphis.usda.gov/animal_health/nahms/dairy/downloads/cryptogiardia-dairy-heifer.pdf

Mycobacterium ssp avium paratuberculosis (Johne's disease):

- Diarrhea associated with *Mycobacterium ssp avium paratuberculosis* (MAP, or Johne's disease) was reported Rarely, and rated decreasing relative to Q1 2022 by one network practitioner.

Salmonella spp.:

- A very small number of clinical cases of *Salmonella* Dublin were reported by Manitoba VSDL, PDS, and UCVM.
- BC S. Dublin Project Report 3 shows similar herd-level bulk tank milk (BTM) prevalence to the previous two reports. These are available at: <https://www.sdublinbc.ca/reports>

Q: Is the approach similar to Quebec, i.e. when responding to BTM screening, focus on herds also having clinical problems e.g. sick calves?

BC: that's the approach of our practice. In BC the S. Dublin project is showing a fairly high level of positive herds on the BTM screening.

MB: don't have good BTM data to go on. However recently we have a case in Q3 which is linked to a case in Q4. Overall, we are seeing a modest increase in clinical cases, from one every couple of years, to one or two per year. So we want to start responding now.

Q: Are you seeing S. Dublin associated with abortion? Since have heard some strains are more associated with this than others.

A: We have not seen it but may not have been looking for it actively enough.

5. Reproductive System

- Reproductive disease was reported Rarely to Very Frequently by network practitioners.
- **Individual cow ovarian and uterine disease** were both reported Commonly to Very frequently by three practitioners.
- **Non-infectious infertility** (e.g. due to nutrition) was reported Rarely to Commonly by two practitioners, with energy and protein deficiencies being reported by one.
- **Un-diagnosed abortions** as a pathologic diagnosis at PDS remained stable.

6. Multi-systemic Diseases

- Multi-systemic diseases were reported Never to Rarely to Commonly by practitioners, with most syndromes (anemia (low blood count), septicemia (blood poisoning with an infection), toxicities) reported occurring never to rarely.
- The exception was **nutritional deficiencies**, reported Commonly by one practitioner, with **copper and selenium deficiencies reported increasing**.



7. Musculoskeletal Diseases

- Musculoskeletal diseases were reported Commonly by all network practitioners, with **Digital Dermatitis** reported Commonly by all, and **footrot** reported Rarely to Commonly to Very frequently.

8. Mastitis

- Mastitis was reported Rarely to Commonly by practitioners.

Pasteurella multocida mastitis

-was reported by UCVMS DSU. Following is a summary of information contained in an info-sheet created by Virginia State University and available at <https://vtechworks.lib.vt.edu/bitstream/handle/10919/75563/DASC-67.pdf?sequence=1Stevens/#:~:text=Because%20Pasteurella%20spp.,the%20spread%20to%20other%20cows.>

- Clinical signs: Mastitis and Endotoxic shock
- Risk factors: Teat injuries
- Pathogenesis: bacteremia followed by localization in the udder, potentially followed by endotoxemia
- Treatment: often not successful due to onset of shock

9. Scan

Brucellosis in Wyoming Elk

- The Wyoming Game and Fish Department has detected brucellosis in Elk Hunt Area 45 in the Bighorn Mountains. The disease was detected in a hunter-harvest bull elk in October [2022]. Last week [week of 31 Oct 2022], the blood sample submitted to the Wildlife Health Laboratory tested positive for brucellosis. The positive detection was confirmed by the National Veterinary Services Laboratory in Ames, Iowa. The Wyoming Livestock Board is working closely with Game and Fish to monitor the disease.
- Brucellosis has not been documented in livestock in this area. "Livestock producers are reminded that there is no risk of spread of brucellosis from bull elk to cattle," said Dr. Hallie Hasel, Wyoming state veterinarian. "Livestock surveillance may be initiated if cow elk are found positive in this region."
- Game and Fish will increase surveillance efforts in the Bighorn Mountains in 2023 to determine the extent and distribution of the disease. Brucellosis was 1st detected on the western slope of the Bighorn Mountains in 2012, but has not been detected since 2016. Retrieved from Promed <https://promedmail.org>

10. Dairy surveillance questions from eastern Canada:

1. Are we able to detect emerging new problems?

CONSENSUS: we currently have a couple of good information sources:

- The free text areas of the practitioners' clinical impressions survey
- Several 'no diagnosis reached' areas in the lab data, e.g. diagnoses of "idiopathic abortion"

2. What is the rate of newly infected premises (for a targeted pathogen), and is this increasing over time?

CONSENSUS: If in future this question were prioritized for a specific pathogen, we could investigate it. This would be a substantial project since it would require improved capture of premises ID by some labs, and linking pathogen detection to anonymized PID.

3. Are we submitting enough samples to the lab to know if something new is happening?

CONSENSUS: The preferred alternative question suggested was: are veterinarians submitting samples to lab based on risk, e.g. are they submitting samples to support diagnosis of new or unusual syndromes? Based on WeCAHN practitioner survey last year, the answer is 'yes'.

4. Does lab data suggest we should be changing treatment protocols?

CONSENSUS: The degree of usage of diagnostic laboratories for mastitis culture varies across practices, for a range of reasons including logistics, timeline for receiving results, and cost. The causes (and therefore prevention strategies) for baby calf mortality may also be understudied, for similar reasons.



Meeting takeaways:

Network practitioners reported several really interesting “zebra” (i.e. less common) diagnoses this fall, including neonatal intestinal tears secondary to umbilical remnants; primary Giardia infection (which may also be associated with significantly reduced ADG even in asymptomatic dairy heifers); and *Pasteurella multocida* mastitis.

They underline the importance of one of the dairy surveillance questions also discussed at the network meeting: do we have the capacity to detect emerging new problems? Do practitioners have the lab data needed to guide treatment

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