Western Canadian Animal Health Network

WECAHN BEEF NETWORK REPORT

October—December 2023

Beef Networking Meeting

The WeCAHN beef network met Feb. 1st 2024 with veterinary practitioners, producers, provincial veterinarians, diagnosticians, and researchers in attendance, discussing the beef health events of Q4 (October– December) 2023.

Interesting cases:

Increased rates of what is suspected to be *Histophilus somni* related arthritis in cattle >70-80 DOF despite "typical" antimicrobial prevention protocols.

COMMENT 1: this is an example of bad becoming normal. We see lots of arthritis in feeders and often *Histophilus* is a clinical diagnosis since it's not the easiest condition to culture. Hoping that vaccine research may be underway to provide us with better options/ risk management strategies.

COMMENT 2: some producers and veterinarians are reporting this winter to be an unusually bad one for *Histophilus* in feeder cattle.

Research is underway to identify the strains which are currently circulating in western Canada and if necessary create updated vaccines which better match these strains.

Small Spike of Congestive Heart Failure (CHF) in non-typical animals with no specific cause found.

Three cows on BSE surveillance post-mortem's with no specific cause notable on post-mortem or history. Veterinarian worked up one out of professional interest with tissues sent to lab, and liver mineral analysis

(suspect copper deficiency related). Copper level was normal.

COMMENT: Copper level interpretation can be tough given that ~ 50% of our western beef cows are rated deficient. If we see post mortem changes e.g. in the heart, and also measure a copper deficiency, how significant is this, given how common copper deficiency is? And clearly a lot of copper deficient cows get pregnant.

If heart changes found in some of these cows with congestive heart failure were due to copper deficiency alone, we would see this more frequently.

But the high prevalence of copper deficiency doesn't mean it's not involved in some CHF cases, and maybe if we fixed the copper status in these herds we would solve the [CHF] problem as well.

FOLLOW-UP: The Meat Animal Research Center (MARC) at Clay Center Nebraska has identified 2 SNPs which they've found associated with significantly increased odds of developing CHF. They offer a commercially available test for both of these SNPs.
For more information: https://www.wecahn.ca/wecahn-tools/wecahn-information-library/Genetic%20risk%20factor%20testing%20for%20bovine%20%20congestive%20heart%20failure%20in%20feedlot%20cattle

Pregnancy testing: open cow rates fall 2023

Network veterinarians' comments:

- BC: we found variable rates. Some still had good rates and a 60 day breeding period. Across our clients, open rates were ~ 2-3% worse than usual. Underlying factors in problem herds were feed quality or just feed shortage, and people turning out cattle for breeding season onto marginal grass.

- AB: we had similar experiences. Interestingly we had some herds turning out fairly lean cattle onto irrigated pastures and they seemed to get a flushing effect that actually improved their conception rates.

- SK: Preg rates: highly variable (from 2-3% open to up to 60+%) across practice area. We saw variation even among different groups in the same operation, or different groups in adjacent pastures. Very small/inactive repro tracts (regressed to point where difficult to palpate in mature cattle).

- MB: "preg check [open] rates were definitely higher than normal. Anywhere from 10-75% open. Probably average 15%. Body Condition Score (BCS) was a significant factor indicating if a cow was going to be bred or not. I would say higher open rate on later calving herds".

WESTERN RESEARCH FINDINGS: IMPACT OF BODY CONDITION SCORE (BCS) ON REPRODUCTIVE PERFORMANCE

Effect of BCS on open rates:

Skinnier cows are more likely to be open, if they have a BCS less than 3 on a 5 point scale.
(Garcia Guerra & Waldner 2013, Therio 79:1083-94)

Skinnier cows are more likely to be open at pregnancy testing in herds with a short breeding season, or late at pregnancy testing in herds with a longer breeding season.

Skinnier cows (BCS less than 3 on a 5 point scale) are more likely to abort than those with BCS greater than 3.
(Garcia Guerra & Waldner 2013, Therio 79:1083-94)

Effect of BCS on calving performance:

Skinnier cows (BCS less than three on a 5 point scale) are more likely to have a stillbirth than those with BCS greater than 3. Heavier cows (BCS greater than 3) have NO increased risk.
(Waldner 2014, Therio 81:840-48; Waldner 2014, Livestock Sc 163:126-39)

Skinnier cows (BCS less than 2) have a greater risk of hard pulls than those with medium (BCS of 3 on a five point scale) scores.
(Waldner 2014, Livestock Sc 163:126-39)

Slightly heavier cows (BCS is 3.5, compared to cows with BCS of 3) have a slightly greater risk of hard pulls.
(Waldner 2014, Livestock Sc 163:126-39)

Broadly, skinnier cows have greater risk of reduced reproductive and calving performance.

DISCUSSION: Genetics of resiliency to nutritional stress

QUESTION: does this exist?

ANSWER 1: YES. But BCS is not the best or only indicator.

Consider "Stay-ability" ie ability to survive in herd to 6th parity.

OPINION: The best measure for a proxy indicator is milk EPD (expected progeny difference), which would be inversely related to resiliency or stay-ability, since if 100% of energy is being allocated to milk production or growth, none is available for resiliency.

Yersinia pseudotuberculosis in a beef cow-calf herd

Herd history: Multiple deaths with similar symptoms, last winter and again this fall. Cows are depressed and off feed. Diarrhea, dehydration and death within 2-3 days. Some cows recover. Last year problems were mostly in small group of custom cows. This year problems are in main cow herd. This cow is death #4 with same symptoms, 2 have recovered. Corn silage, Total Mixed Ration includes clover. Full VBP vaccine program. 800 in herd. Canada geese frequent around feeding ground.

PM: Carcass was sunken, eyes bloodshot. Diarrhea with blood in bowel, 75 days pregnant. Lungs, trachea, liver, heart all normal.

Cause: *Yersinia pseudotuberculosis* [bacteria].

COMMENTS:

Yersinia pseudotuberculosis is not isolated frequently. We will continue to monitor the laboratory data and vets' clinical impressions surveys for these sporadic Yersinia cases. Although so far, fortunately, they seem to be quite rare, they could be important for several reasons:

- Potential for zoonosis. In the case reported last quarter, caregivers (feedlot workers) became ill with gastrointestinal symptoms similar to the cattle.
- So far there have been livestock deaths in each affected herd.
- Infection sources so far have all been unclear, but theorized to possibly be associated with wildlife.

Syndromic surveillance: Respiratory system

Bovine respiratory disease (BRD) pneumonia caused by *Mannheimia haemolytica* or *Pasteurella multocida* was reported Commonly by network veterinarians and also seen with treatment failures. The tre

QUESTION: could the veterinarians' reports of treatment failure could be associated with nutritional stress of animals?

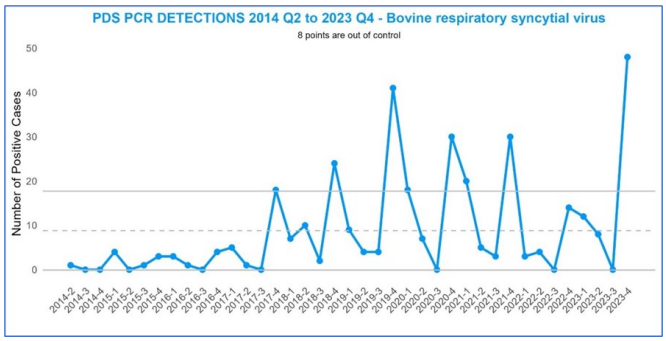
ANSWER: in feedlots in southern AB we saw copper deficiency in a couple of different settings:

- some groups of animals just came in deficient and we could map these groups' origins over time and see some consistent patterns.
- we saw occasional nutritionist errors, one involving elevated zinc levels which created a conditioned copper deficiency.

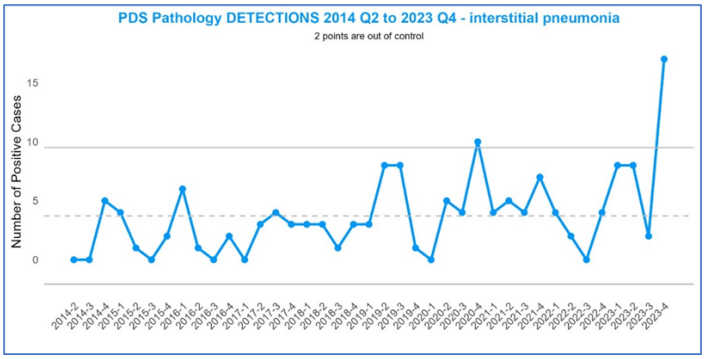
Bovine Respiratory Syncytial Virus (BRSV) detections trended up in Q4 (October – December) 2023 at one western lab, and as with previous historical BRSV data, this trend was not noted at others.

Recap on 'control charts': In the following graphs, each data point reflects the number of positive samples or cases reported by a diagnostic laboratory, 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.



BRSV may be found with some types of pneumonia in association with BRD pathogens such as *Mannhaemia haemolytica*. However, it may also be associated with a different form known as interstitial pneumonia. This type of pneumonia was also increased in Q4 (October—December) 2023 at one western veterinary diagnostic laboratory.



To help understand these different temporal patterns in BRSV detection, Prairie Diagnostic Services has received funding from the Beef Cattle Research Council (BCRC) to prospectively sequence clinical beef BRD isolates. The objectives are to understand which major viral subgroups are circulating in western Canada, and compare these with vaccine strains. WeCAHN is supporting this initiative by providing additional funding to similarly sequence and study dairy-derived isolates as well as those found by the other labs in western Canada.

Digestive system

Digestive system disease was reported on the WeCAHN survey more than monthly to more than weekly by veterinarians. Diarrhea was reported more than monthly by all network veterinarians and associated with *Cryptosporidia* by one. All causes of diarrhea were rated Stable relative to the previous time period (July – September 2023).

Laboratory tests for Johne's disease, on blood and manure, continue to show a gradual increase in clinical positives seen since 2014 on the central prairies.

Bovine Coronavirus project at PDS

This study has sequenced bovine coronavirus from gastro-intestinal samples to study variability in the spike protein, and compare clinical isolates to vaccine strains.

Preliminary findings: Some differences between vaccine and clinical case-derived isolates are noted.

Meeting takeaways

Research is underway in western Canada to study the match between circulating BRD pathogens and those present in current vaccines.

The reduced pregnancy rates reported in many beef herds in 2023 may reflect drought-related changes in BCS and nutritional status, and could also suggest value in selecting cows for resilience and stay-ability.

Some cattle diseases are zoonotic, including *Cryptosporidia*, which may be associated with calf scours, and the recently described cases of *Yersinia* diarrhea in older cattle. A WeCAHN podcast on zoonotic diseases in cattle by Dr. Sylvia Checkley at UCVM, describing these diseases and their prevention, can be heard here: https://wecahn.podbean.com/e/zoonotic-diseases-of-cattle/