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ag animal health
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In This Issue

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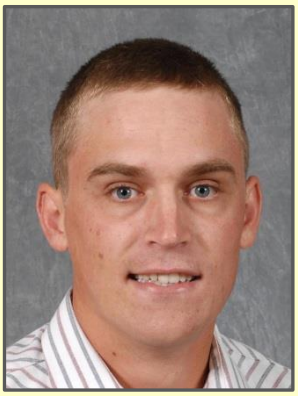
From the Editor – So – I am celebrating 9 years at WSU. Can you believe this is the 36th issue of *ag animal health?*

DA Moore

The ag animal health newsletter is devoted to the transfer of current, relevant information to food animal owners and veterinarians in the Pacific Northwest.

Congratulations are in Order!

We have scholarship winners! Devon Kartchner is a recipient of the AABP Amstutz Scholarship. Congratulations, Devon! Lane Schmitt and Kevin Gavin are recipients of the AABP Bovine Veterinary Student Recognition Award. This award also comes with a scholarship. Nice going, Lane and Kevin (Class of 2018)! Please congratulate our students.


Devon Kartchner


Lane Schmitt


Kevin Gavin

WA VCPR Rule Took Effect June 4th

by Dale A. Moore, Extension Veterinarian

The new Washington State Veterinary Client Patient Relationship rule took effect last month. (http://wsvma.org/new-vcpr-definition-takes-effect-june-4-2016/)

Based on the Rule-Making Order, "The VCPR assumes that the veterinarian is responsible for the health of the patient, has current knowledge of the patient's condition, and is available for follow up evaluation or has arranged for emergency coverage…The veterinarian has assumed responsibility for making clinical judgments regarding the health of the animal(s) and need for medical treatment, and the client or key party… "

This rule is not just for food animal veterinarians, but applies to all veterinarians. The veterinarian must have sufficient knowledge of the animal or animals to generate a preliminary diagnosis and means that they have examined animals in the previous 12 months. For multiple animals on a premise, such as in shelters, labs and farms, the veterinarian must be knowledgeable about the standards of care and management of those groups.

For animals or animal products for food consumption, "there must be a written agreement that identifies the veterinarian of record (VOR) who is accountable for drug use and treatments administered to animals on farm operations." The veterinarian is responsible for oversight of all drugs used on farm operations, regardless of how they are distributed. The veterinarian which includes:

- Establishment of diagnostic and treatment protocols
- Training of personnel
- Review of treatment records
- Monitoring drug inventories
- Assuring appropriate labeling of drugs
- Monitoring compliance and outcomes
- Maintenance of medical records

For more details on the Rule, see: http://apps.leg.wa.gov/WAC/default.aspx?cite=246-933&full=true#246-933-200

What's New at WADDL?
Blackleg in Cattle and Sheep

by Drs. Dale A. Moore and Kathy Potter

WADDL confirmed a veterinarian's diagnosis of blackleg in a group of young cattle recently. This is a very dramatic disease and one every veterinarian learned about in school. When it hits, it can be very fast-moving and start with a high fever and result in death. Often, the farmer will find the animals dead with no signs beforehand, or severe lameness, fever and depression may be observed. The limbs may be swollen and feel like very small bubble-wrap because of little gas pockets in the muscle tissue.

Unusual are lesions in the heart. In a report from the UK: “Outbreaks of clostridial myositis or ‘blackleg’ caused by *Clostridium chauvoei* were reported by Carmarthen, Leahurst and Starcross. Unusually, in each outbreak, there were lesions present in the heart and/or pericardium of the animals examined postmortem. In the first case, three of a group of 33 calves aged six to seven months were found dead. One other animal was reported to be lame. In the second outbreak, five of a group of 38 cattle which were aged between eight and 16 months died after escaping from 25 acres of parkland into a neighbour's field, where cases of clostridial myositis were known to have occurred in the past. The third case was diagnosed in a group of 20 housed yearling bulls. Severe abdominal pain, malaise and recumbency were reported with the deaths of four occurring within 48 to 72 hours. There was similar pathology in each case with a fibrinous pericardial exudate (Fig 2) and foci of blackening within the myocardium. Fluorescent antibody testing for *C chauvoei* on the heart muscle lesions was diagnostic. None of the animals in the outbreaks had been vaccinated, which was recommended for disease control.”

Heart affected by *Clostridium chauvoei*

Blackleg is caused by the Gram positive bacillus *Clostridium chauvoei*. The bacteria are found naturally in the intestinal tract but also in spore-form in the soil. Outbreaks may result from recent soil disturbance or heavy rain, and is sometimes seen when young cattle are moved to a new, lush pasture. The animals eat the spores which may pass through the gut wall, get into the bloodstream and get into muscle tissue or liver. The inciting factors for initiating the disease are not well understood. In sheep, the condition is likely initiated by a wound, even a small one. Is this a disease of poor-doers or malnourished? No! In cattle, the condition is usually seen in very well-fleshed animals, usually those that are gaining weight.

Although the clinical signs of dark, dry or spongy muscles are fairly diagnostic, to confirm a diagnosis for *Clostridium chauvoei, C. novyi, C. septicum, C. sordelli*, WADDL uses a fluorescent antibody stain that is $12.00 in state and $18.00 out of state.

Control of this disease is through vaccination, which is very safe and very to moderately effective. Recommendations are to vaccinate calves at 3 to 6 months of age twice, four weeks apart and then annually, because of waning immunity. In the face of an outbreak, all animals should be vaccinated and treated with penicillin (off-label dose – see your

veterinarian for the right dosage and extra label drug use prescription). For cattle, removal from an affected pasture is warranted.

References

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Useh NM, Ibrahim NDG, Nok AJ, Esievo KAN. Relationship between outbreaks of blackleg in cattle and annual rainfall in Zaria, Nigeria. Vet Rec. 2006. Jan 21;158:100-101.

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WSDA Corner

We are without both a State Veterinarian and an Assistant State Veterinarian at this writing. The Director of Agriculture removed the sitting State Veterinarian, Dr. Joe Baker, citing a need for new directions. We will miss Dr. Baker.

WSU Ag Animal Health Research Abstracts

1) Short DM, Moore, DA, Sischo WM. A Randomized Clinical Trial Evaluating the Effects of Oligosaccharides on Transfer of Passive Immunity in Neonatal Dairy Calves. J Vet Intern Med. 2016 Jun 8. doi: 10.1111/jvim.13949. [Epub ahead of print]

BACKGROUND: Bacterial contamination of colostrum is common and can decrease IgG absorption in neonatal calves. Strategies that mitigate this situation without complicating colostrum management will benefit dairy calf health and survival.
OBJECTIVES: To evaluate the effects of supplementing colostrum with oligosaccharides (OS) on serum IgG concentration and apparent efficiency of absorption of IgG (AEA%) in calves fed unpasteurized colostrum and characterize these outcomes with respect to colostrum bacterial exposures.
ANIMALS: One hundred twenty-three neonatal dairy calves.
METHODS: Randomized, blinded, controlled clinical trial conducted at a commercial dairy operation. Calves were enrolled at birth in 1 of 4 treatment groups. Data were complete for 123 calves, which were distributed across the treatment groups as follows: mannan-oligosaccharides (MOS), n = 33; Saccharomyces galacto-oligosaccharides (SGOS), n = 31; Bifidobacterium galacto-oligosaccharides (BGOS), n = 28; and lactose control (CON), n = 31. A commercial radial immunodiffusion kit was used to determine colostrum and serum IgG

concentrations. Conventional microbiology methods were used to enumerate colostrum bacterial counts.
RESULTS: Bacterial counts were not significantly different among treatment groups. Total bacterial plate counts (TPC) were relatively low for the majority of colostrum samples, but TPC had a significant negative effect on serum IgG concentration and AEA% in the lactose-supplemented control group but not the OS treatment groups.
CONCLUSIONS AND CLINICAL IMPORTANCE: These results suggest that a complement of OS structures may mitigate adverse effects of bacteria on transfer of passive immunity (TPI).

2) Say E, Çoban S, Nak Y, Nak D, Kara U, White S, Kasimanickam V, Kasimanickam R. Fertility of Holstein heifers after two doses of PGF2α in 5-day CO-Synch progesterone-based synchronization protocol.

The objective of the study was to determine the effect of three different PGF2α (PGF) treatments in the 5-day CO-Synch progesterone-based synchronization protocol on artificial insemination (AI) pregnancy rate (PR) in Holstein heifers in Turkey and the United States. We hypothesized that two doses of PGF administered concurrently or 6 hours apart would result in greater AI pregnancy compared with a single dose of PGF on Day 5 at controlled internal drug release (CIDR) removal. In Turkey, Holstein heifers (n = 450) from one farm in the province of Adana and another farm in the province of Bursa were included. In the US, Holstein heifers (n = 483) from two locations in the state of Idaho were included. Heifers within locations were randomly allocated to one of three protocol groups: 1PGF-received 25 mg IM of dinoprost at CIDR removal; 2Co-PGF-received 50 mg IM of dinoprost at CIDR removal, and 2PGF-received 25 mg IM of dinoprost at CIDR removal and an additional 25 mg IM of dinoprost 6 hours later. All heifers received a CIDR (1.38 g of progesterone) and GnRH (10 μg IM of Buserelin [Turkey] or gonadorelin hydrochloride [US]) on Day 0. The CIDRs were removed on Day 5, and each heifer was given PGF according to the assigned treatments. On Day 7, each heifer was given another dose of GnRH and concurrently inseminated at 56 hours after CIDR removal. Heifers in both experiments were examined for pregnancy status between 35 and 45 days after AI. Overall, controlling for age, the heifers in the 2PGF group had greater AI-PR (61.7% [192/311]) than heifers in 2Co-PGF (48.2% [149/309]; $P < 0.001$) or 1PGF (53.7% [168/313]; $P < 0.05$) groups. No difference was observed between 2Co-PGF and 1PGF groups ($P > 0.1$). In Turkey, the heifers in the 2PGF group had a greater AI-PR (60% [90/150]) than 2Co-PGF (45.3% (68/150); $P < 0.01$] group. No difference was observed between 2PGF and 1PGF (55.3% [83/150]) groups ($P > 0.1$). There was a trend for AI pregnancy between 1PGF and 2Co-PGF groups ($P = 0.08$). In the United States, the heifers in the 2PGF group had a greater AI-PR (63.4% [102/161]) than the heifers in 2PGF (50.9 [81/159]; $P < 0.05$) or 1PGF (52.1% [85/163]; $P < 0.05$) groups. Heifers that were 15- and 16-month old achieved greater AI-PR than 17- and 18-month-old heifers (59.2 [342/578] vs. 47.0% [168/355]; $P < 0.01$). In conclusion, **administration of 2PGF at 6 hours apart on Day 5 at CIDR removal in a 5-day CO-Synch + CIDR protocol resulted in greater AI pregnancy. A greater number of 15- and 16-month-old heifers became pregnant compared with 17- and 18-month-old heifers.**

3) Adkins PR, Middleton JR, Fox LK. Comparison of Virulence Gene Identification, Ribosomal Spacer PCR, and Pulsed Field Gel Electrophoresis for Strain-Typing Staphylococcus aureus Isolated from Cases of Subclinical Bovine Mastitis in the USA. J Clin Microbiol. 2016 May 18. pii: JCM.03282-15. [Epub ahead of print]

Staphylococcus aureus is one of the most important pathogens causing contagious mastitis in dairy cattle worldwide. The objectives of this study were to determine if the recently described Staphylococcus aureus Genotype B was present among previously characterized isolates from cases of bovine intramammary infection in the USA and to compare pulsed-field gel electrophoresis (PFGE) to the combination of ribosomal spacer PCR (RS-PCR) and virulence gene identification for strain-typing of S. aureus The hypothesis was that isolates that were previously characterized as contagious would be identified as Genotype B and that the two strain-typing methods would be comparable. Isolates were selected from a collection of S. aureus isolates from eight dairy farms. Mammary quarter milk somatic cell count (SCC) and N-acetyl-β-D-glucosaminidase (NAGase) activity was known and used to evaluate strain pathogenicity. RS-PCR with conventional gel electrophoresis was performed and PCR was used for toxin gene identification. RS-PCR patterns were associated with a specific virulence gene pattern, as previously reported. Five RS-PCR banding patterns were identified. None of the isolates were characterized as Genotype B. No association between RS-PCR types and milk SCC was found, however milk NAGase activity was significantly higher in milk from mammary glands infected with RSP-type-1 than those infected with RSP-type-2. The discriminatory powers were 1.0 and 0.46 for PFGE and RS-PCR, respectively. These data suggest that Genotype B may have a limited geographic distribution and PFGE is more discriminatory than RS-PCR performed with conventional gel electrophoresis for strain-typing *S. aureus* isolates of bovine origin.
[Editor's Note: Not all Staph aureus are the same. Some are very virulent and others not. As causes of mastitis, many different kinds may be isolated. In Switzerland, 80% of isolates were Genotype B (very virulent) and Genotype C. However, in the US isolates studied here, the Genotype B was not found. The implications are that they did not find these virulent B types and that there may be different clones of organisms in different locations indicating different control strategies for different strains.]

Beef Health Management – Things to do in Summer

by Dale A. Moore, Extension Veterinarian

Summer is the time for most of us to engage with hot dogs, ice cream, BBQs, and vacation. Ranchers have some other things to think about this season. From the Beef management calendar, here are some things to consider for summer activities:

JULY
SPRING CALVING HERD
If cattle are on irrigated pasture, consider mid-summer working opportunities:
• Consider deworming cows and calves as needed, based on body condition, performance, and fecal exams
• Re-implant calves

Bulls should be removed from the cow herd, grouped together in a pasture with good fence and allowed to regain condition.

FALL CALVING HERD
At the start of calving, aim for mature cows to have a BCS of 5.5–6 and first-calf heifers to have a BCS of 6.5–7. Keep a good free-choice mineral mix available at all times and protect it from weather. Plan to have good pasture available for fall calving. Replacement heifers should gain at an adequate rate to reach their targeted breeding weight (55–65% of mature size) by about the third week in November. Consider deworming cows based on body condition or other health factors.
Observe first-calf heifers closely now, since they should begin calving next month. Expect calving difficulty and intervene if:
• No progress after 60 minutes of labor
• Calf is backwards (only the calf's tail is visible or the dewclaws are pointed up)
• Calf's head and two feet are not visible
Assemble, inspect and disinfect equipment for calving season. This equipment may include:
• Puller and chains, ear tags, record book, scales, disease-free frozen colostrum and commercial colostrum supplement, oral calf feeder, iodine for navels, electrolytes, injectable antibiotics, syringes and needles, injectable Vitamin E/Selenium supplement.
Determine breed and type of bull needed for next breeding season. Pay attention to your fly control program and if it is working for you.

AUGUST
SPRING CALVING HERD
Consider limited creep-feeding or early weaning during late summer if pasture is running short. Three to four weeks before weaning, vaccinate for clostridial and respiratory diseases per veterinarian and label directions. If needed, deworm and implant. Weigh at weaning and record. Practice low-stress weaning.

FALL CALVING HERD
Calving season begins. Cows should be moved to a clean, accessible pasture for calving. Consider new calving ground every two weeks for uncalved cows. Monitor for difficult calving. Calving difficulty can result in an increased incidence of BRD in pre-weaned calves due to a reduced ability to absorb colostral antibodies; it is also associated with increased time to first heat and decreased pregnancy rates in cows.

Dip newborns' navels with disinfectant when possible. Identify calf with ear tag and/or tattoo while it is young and easy to handle. Administer injectable Vitamin E/Selenium if indicated. Record calf ID, dam ID, birth date, and birth weight if possible. Weigh registered calves during the first 24 hours following birth. Commercial male calves should be castrated and, if feedlot program allows, implanted according to product recommendations. Castration and dehorning are less stressful when performed on young animals. For neonatal calves, administer oral antibodies or early vaccination for disease-causing organisms as recommended by veterinarian. Monitor, treat, and segregate calves for scours, respiratory disease, and navel ill.

SEPTEMBER
SPRING CALVING HERD
Consult your veterinarian on the merits of a pre-weaning working of the herd, which may

include implementing steps of preconditioning protocol such as booster vaccinations, deworming, etc. Pregnancy check and consider selling open cows and heifers and those weaning poor-quality calves. Deworm calves as needed if retaining more than 30 days. Creep feeding may give extra gain and prepare calves for eating dry feed at weaning, but is not cost effective if calves have adequate milk and forage.

FALL CALVING HERD
Fall calving continues.
Consider new calving ground every two weeks for uncalved cows. Monitor for difficult calving. Calving difficulty can result in an increased incidence of BRD in pre-weaned calves due to a reduced ability to absorb colostral antibodies; it is also associated with increased time to first heat and decreased pregnancy rates in cows. Dip newborns' navels with disinfectant when possible. Identify calf with ear tag and/or tattoo while it is young and easy to handle. Administer injectable Vitamin E/Selenium if indicated. Record calf ID, dam ID, birth date, and birth weight if possible. Weigh registered calves during the first 24 hours following birth. Commercial male calves should be castrated. Castration and dehorning are less stressful when performed on young animals.

Line up A.I. sires and/or purchase new bulls at least 30 days prior to breeding season. Choose a breed and use EPDs and visual observation to select the bull that best fits your program and budget. Quarantine any herd additions for at least 30 days.
Have veterinarian perform breeding soundness evaluations on all bulls. Evaluate yearling replacement heifers for frame size, reproductive tract score, and weight. Heifers should reach their target weight of 55–65% of expected mature weight before being bred. A mature moderate frame size of 4–5 is desirable.

http://cru.cahe.wsu.edu/CEPublications/MISC0396/misc0396.pdf

Continuing Education in Our Region

Veterinarians

Academy of Dairy Veterinary Consultants. Fall 2016 Meeting. When: November 11 & 12, 2016. Where: UC Davis VMTH in Davis, CA. Topics: VFD review, On Farm Necropsy Experience and Rotating Wet Labs: Systemic approach to necropsy, Specimen submission, Review of gross lesions of common diseases and tour of the D-lab.
https://academyofdairyveterinaryconsultants.org/

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