MARCH 2019

Newsletter

AMERICAN ASSOCIATION OF BOVINE PRACTITIONERS

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THE PRESIDENT'S MESSAGE

A Ginormous Bang for Your Buck

"Am I getting my money's worth?" We ask ourselves this when evaluating discretionary spending, such as membership dues in professional organizations. Am I getting a return for my $150 annual investment in AABP? Of course, the answer is a resounding YES! Not only are you getting a return, but a "ginormous" return, which is probably about one billable hour for your practice.

Show Me the Money
AABP is the largest cattle veterinary organization in North America, with over 5,200 veterinarian and student members. I would value the networking and lifetime friendships with bovine veterinary colleagues as the number one reason for AABP membership – but there's much more. What follows are some of the AABP membership benefits:

Recent Veterinary Graduate Conference
The 2019 2nd Annual AABP Recent Veterinary Graduate Conference, held last month in Columbus, Ohio, was a huge success and surpassed the attendance of last year's inaugural conference. My hat is off to the program committee and our leadership with the vision to recognize the need for this venue. Positive comments from participants included, "This environment made me feel freer to interact and engage without being intimidated by more experienced veterinarians."

The energy and enthusiasm of these recent graduates was evidenced by the networking and professional relationships developed and expanded. Dinner conversations often revolved around the difficult and unusual obstetric cases such as uterine torsions, c-sections, fetotomies and prolapses – stories oddly similar to conversations from 30-40 years ago, but with the added advantage of a prolific array of cell phone images.

Veterinarians attending this conference are the future of bovine veterinary medicine and AABP.

AABP Annual Conference
Attendance at the AABP Annual Conference places us in contact with outstanding colleagues from diverse geographies and unique experiences. Attendees at our AABP Annual Conference and Recent Veterinary Graduate Conference provide opportunities to reflect and grow personal and professional relationships with other bovine practitioners. Sessions from both of these conferences will also be submitted for RACE approval, bringing even more value to our CE.

Practice Management Workshops
AABP has received two National Institute for Food and Agriculture grants ($224,136 in 2016 and $238,270 in 2018) through the USDA Veterinary Services Grant Program for practice management workshops. These funds support rural veterinary services to relieve veterinary shortages in parts of the U.S. Our two-to-three-day workshops target veterinarians in the early stages of their career and have focused on veterinary practice analysis and human resources management.

Webinars
AABP sponsors cutting-edge webinars on various topics, some of which are RACE-approved. The ad hoc Genomics and Genetics Committee has been especially active in utilizing this format. Last month 26 members took advantage of a genomics webinar, and two more genomics webinars are scheduled for March and April.

Online CE
Through cooperation with Kansas State's Beef Cattle Institute (BCI), presentations from AABP conferences are downloadable from the AABP BCI CE website or the BCI app. Search for BCI Mobile Conference in the app store. Download and listen during your hours of windshield time!

Publications
Proceedings for both the AABP Annual Conference and Recent Veterinary Graduate Conference are available to members. The *Bovine Practitioner* is the only peer-

reviewed journal available in the U.S. with articles limited to bovine veterinary topics. The monthly newsletter provides timely and relevant news items and abstracts from scientific publication sources.

Student Programs
AABP's commitment to students includes scholarships (~ $2.5 million awarded), externships, the Quiz Bowl, a student reception, case presentation and poster competition, a student chapter award, $500 for every student chapter, a delegate program, student recognition awards, a faculty adviser award and education grants. Each year the Amstutz Scholarship Auction showcases the generosity of bovine practitioners and AABP's commitment to students. The last auctions have averaged close to $100,000.

TAMU Document Research Service
Another valuable member benefit is free access to the Texas A&M Document Research Service. Through the Reference and Literature Searching Services, AABP members are provided direct access to Aggie librarians who can assist in information retrieval. The Get It For Me Services provides for free use of online search tools.

Mentorship Program
In late 2018 the AABP Membership Committee established a formal mentorship program to unite recent graduates (2017-2018) with more seasoned colleagues. To date, 50 members have signed up to be mentors. Find more information at https://aabp.org.

Guidelines and Position Statements
AABP is increasingly looked to as a source for various guidelines and position statements used in formulating industrywide standards for topics such as antimicrobial stewardship, castration and dehorning, cattle transportation and more. These documents are publicly available on the AABP website.

Advocacy
The AABP Executive Committee travels to Washington, D.C., annually to meet with groups such as the AVMA, NCBA and FDA. Capitol Hill visits are made to represent AABP positions on various animal health topics. AABP liaison members also represent our organization at AVMA, CAST, PAACO, NCBA and many other organizations.

AABP-L
This listserve currently has 2,124 subscribers and is a valuable platform for professional interaction between veterinarians from the U.S., Canada and across the globe.

A Challenge to You
The value of AABP membership is obvious, but there are veterinarians engaged in bovine veterinary practice who are not currently members. Many of them are likely unaware of all that AABP offers. My challenge is for everyone reading this to recruit at least one new AABP member in 2019. We all have opportunities to "close the deal". If you are a practice owner, pay for AABP membership for every cattle veterinarian in your practice. If you work in academia, promote AABP membership at a faculty meeting. If you are in industry, seek to make AABP membership a prerequisite for technical services or government-employed veterinarians. If everyone reading this recruits just one member, we could see substantial growth in 2019.

I cannot think of one good reason why a bovine veterinarian would not spend $150 for an AABP membership. The more AABP members we have, the stronger our voice in representing bovine veterinarians and expanding member services. An even more ginormous bang for your buck!

Dr. Glenn Rogers

FUTURE MEETINGS

American Association of Bovine Practitioners

2019	**St. Louis**	**September 12 – 14**
2020	Louisville	September 24 – 26
2021	Minneapolis	September 23 – 25
2022	Long Beach	September 22 – 24
2023	Milwaukee	September 21 – 23
2024	Columbus	September 12 – 14

World Association for Buiatrics

2020	Madrid, Spain	September 13 – 18

DISCLAIMER

The AABP does not take responsibility for information contained in or accuracy of the abstracts published in this newsletter.

ACTIVITIES AND ADVOCACY

The following are activities AABP leadership has been involved in for the benefit of members and the industry:

- 2019 2nd Annual AABP Recent Veterinary Graduate Conference, Columbus, Ohio – Executive Vice President, AABP Executive Committee

AABP NEWS

AABP Website Log-in Information

AABP recently obtained a secure certificate for our website. This means that when you are logged into our website, you should no longer see a message that says "website not secure." Some members may have difficulty logging on to the website since this upgrade.

To log on to the secure website, do not go to the previous bookmark (www.aabp.org), but instead type https://aabp.org into your web browser. Then, log onto the

website using your username/member number and password. If you have forgotten your password, click the "forgot password" link to have an automatic email generated. If the email does not have sufficient information to remember your password, simply email aabphq2@aabp.org requesting your password.

You will need to be logged in to see the members-only area of the website which includes access to the member center, where you can find links to online CE, document search service, residue reports from USDA, AABP publications and access to discounted subscriptions to Vetstream's Vetlexicon bovis.

AABP Recent Veterinary Graduate Conference Continues to Inspire

The future of the bovine veterinary profession looks bright as demonstrated by the attendance and interaction of veterinarians at the 2nd Annual 2019 AABP Recent Veterinary Graduate Conference held Feb. 7-9 in Columbus, Ohio.

The conference was limited to AABP members who have graduated veterinary school from 2011-2018, and had a total attendance of nearly 200. A special appearance by Iowa State University's "Frosty", a full-size, fiberglass cow used as an obstetric teaching model (and her full-size calf Snowflake) enabled attendees to get instruction and practice on normal and abnormal presentations of a calf at birth.

General topics, clinical skills, business management and beef and dairy-specific sessions were offered, as well as three preconference seminars including a breeding soundness exam course and wetlab at The Ohio State University's veterinary school, a seminar on DairyComp 305 and a seminar on practice valuation.

The program committee consisted of veterinarians who had graduated between 2011 and 2018. Program Chair Dr. Jessica Simons says, "The program committee had 100% control over selecting the topics for the meeting. It was extremely beneficial for recent graduates to plan the conference since we have been seeing similar opportunities in practice as well as encountering the same struggles."

The conference was launched in 2018 as a result of the different needs of recent graduates, many of whom are unable to attend the AABP Annual Conference in September. "In my conversations throughout the conference with recent graduates, they were overwhelmingly supportive of this venue as a productive way to learn and network among peers in their age demographic," explains AABP President Dr. Glenn Rogers.

Simons says reviews of the conference proved that attendees felt much less intimidated being surrounded by peers versus at the annual conference where recent grads might be less likely to ask questions.

The conference also featured the use of the Slido app platform, an interactive program where attendees can ask questions, answer polls and more by using their smartphones. "This technology allowed attendees who might not stand and ask a question in front of the group to offer excellent questions to speakers," Simons says.

The conference offered 23.5 RACE-approved continuing education (CE) credits. AABP Executive Vice President Dr. Fred Gingrich says, "AABP is pleased to offer our first conference that has been RACE-approved. The AABP Board of Directors continues to offer membership benefits that demonstrate the high value cattle veterinarians can place on AABP."

Retention of younger veterinarians to service the needs of cattle practice in rural communities is imperative for the continued growth and vitality of cattle veterinary medicine and to contribute to rural community sustainability, Rogers says.

"AABP continues to hold true to the mission that started our organization 53 years ago," Gingrich adds, "to offer relevant, practical and scientific CE to cattle veterinarians."

AABP Genomics Webinar Series

The AABP Genomics Committee will present two more genomics webinars in March and April. Upcoming webinars will be:

Upcoming webinars:

- March 20, 2019, 4:00pm EST, Dr. Albert DeVries "Genomic Strategies and Economic Outcomes". Join at https://global.gotomeeting.com/join/213465253. You can also dial in using your phone. United States: +1 (408) 650-3123, then enter access code 213-465-253.
- April 24, 2019, 4:00pm EST, Lauren Osborn, Riverview Dairy, LLP and Wulf Cattle, LLP, "How to make the most of a beef on dairy strategy: The Riverview and Wulf Cattle experience". Join the webinar at https://global.gotomeeting.com/join/484739933. You can also dial in using your phone. United States: +1 (646) 749-3112, then enter access code 484-739-933.

It is recommended to log on to the meeting 5-10 minutes before the scheduled start time, and to do a system check before the meeting by visiting https://link.gotomeeting.com/system-check.

The March 20th webinar is RACE-approved for 0.50 hours continuing education credit in jurisdictions that recognize RACE approval. Please make sure you log in to the webinar with your first and last name so that the AABP office can issue a CE certificate to you.

Miss a webinar? The webinars will be available on the BCI AABP CE portal for future viewing. Download the BCI Conference App in the Google or Apple store to listen and view conference presentations on the go.

DEADLINE REMINDERS

Call for AABP Abstracts
Research Summaries and Scientific Poster Sessions
2019 52nd AABP Annual Conference

The 2019 52nd AABP Annual Conference, Sept. 12-14 in St. Louis, Mo., will feature scientific sessions focused on cutting-edge research that is directly applicable to the health, welfare and productivity of cattle and food and environmental safety associated with cattle production. These sessions allow researchers from around the world to disseminate state-of-the-art information to bovine practitioners to improve the cattle industry.

Research projects having direct application to bovine practitioners are being solicited for presentation at the Oral and Scientific Poster Sessions for the 2019 Annual Conference. Project summaries focused on all areas of bovine health, welfare and production are welcome, including pharmacology, epidemiology, medicine, surgery, economic analysis, pathology, preharvest food and environmental safety, diagnostics, and health monitoring. Projects should have relevance to bovine practitioners and may be broadly applicable to the cattle industry, or more specifically applicable to the beef or dairy industry.

Oral presentations made by graduate students in the AABP Research Summaries will be eligible to compete in the AABP Graduate Student Research Summary Presentation competition. The top three presenters from the graduate student competition will receive cash awards.

To be considered for the AABP Research Summaries (either the oral or poster sessions) and publication in the Annual Conference proceedings, your abstract must be submitted electronically **by April 15, 2019 at 5 pm EST**. The submission site is open now. For more information and to submit an abstract, go to www.aabp.org and select the Conference link at the top of the page, then click on the Abstract Submission link located in the submenu.

For questions, contact Dr. Edouard Timsit (eftimsit@ucalgary.ca) or Dr. Chris Chase (christopher.chase@sdstate.edu).

Call for AASRP Abstracts
Small Ruminant Research Summaries
AASRP Meeting at 2019 52nd AABP Annual Conference

The 2019 52nd AABP Annual Conference, Sept. 12-14 in St. Louis, Mo., will feature a scientific session focused on small ruminant research applicable to the health, welfare and productivity of goats, sheep, camelids or farmed deer.

Research projects having direct application to small ruminant practitioners are sought for the Oral Session on Friday, Sept. 13. Presentations should be limited to 15 minutes. Faculty, graduate students, practitioners or veterinary students may submit abstracts for consideration.

Project summaries focused on all areas of small ruminant health, welfare and production are welcome including pharmacology, epidemiology, medicine, surgery, economic analysis, pathology, preharvest food and environmental safety, diagnostics, and health monitoring. Projects should have relevance to practitioners and may be broadly applicable or more specifically applicable.

A $1,000 cash prize will be awarded to the winning oral presentation if there are at least three graduate student oral presentations in the AASRP session.

Abstract submissions for the Small Ruminant Research Summaries session must be submitted electronically to AABP **by April 15, 2019** at 5 pm EST for consideration. The submission site is open now. For more information and to submit an abstract, go to www.aabp.org and select the Conference link, then Research Summaries-AASRP for the Abstract Submission link located in the submenu.

For questions, contact Dr. Fred Gingrich (fred@aabp.org).

Student Externship Program

Do you know a promising student who is interested in food animal medicine? Are you a student looking for an externship or in need of help to fund an externship? Apply for the AABP Student Externship Program. It's a scholarship to enable students with an interest in bovine medicine to use their summers and school breaks to gain experience in the field.

Applications for funding are available on the AABP website at www.aabp.org/students/asep.asp. You can also find the information in the Student section under AABP Grants/Scholarships. You can submit your application and reference letters from faculty members online. We have also added an online database of clinics interested in hosting students under the Externship Opportunities section of the website (there is a link from the Student section of the AABP website).

For more information, contact the AABP headquarters at 800-269-2227 or Fred@aabp.org. **The deadline for applications for externships occurring between May 1, 2019 and October 31, 2019 is April 1, 2019 at 5 pm EST.**

Scholarship Applications Open March 15!

Students, watch for communications and check the AABP website (log in at www.aabp.org) for scholarship applications for the 2019 52nd AABP Annual Conference.

AABP Foundation–Zoetis
Veterinary Student Scholarship

The 2019 AABP Foundation-Zoetis Veterinary Student Scholarship Program is offered to third-year veterinary students (class of 2020). The scholarship program provides cattle medicine-interested students with financial support to help offset the high cost of veterinary education and helps prepare them for a future in the beef and dairy industries.

The $5,000 award also includes a $750 stipend for travel/lodging expenses for recipients attending the 2019 52nd AABP Annual Conference in St. Louis, Mo.

Apply between **March 15 and June 7, 2019** at https://aabp.org/foundation/zoetis/default.asp.

Amstutz Scholarship

The Amstutz scholarships are funded by AABP members, the proceeds from the Amstutz Scholarship Auction and generous support from Elanco Animal Health. Applicants must be in their second year (will graduate in 2021) veterinary students.

Apply between **March 15 and June 7, 2019** at http://www.aabp.org/Students/scholinfo.asp**.**

Merck Student Recognition Award

The Merck Student Recognition Award provides $5,000 scholarships to second- and/or third-year (will graduate in 2020 or 2021) veterinary students.

Apply between **from March 15 to June 7, 2019** at http://aabp.org/students/stud_rec_award.asp.

AABP Antimicrobial Susceptibility Position Statements Open for Comment

AABP position statements and guidelines are approved by the AABP Board of Directors and are subsequently opened for member comment at scheduled intervals. Two position statements on antimicrobial susceptibility, "AABP Position on New Antimicrobial Approval" and "AABP Position on Monitoring Antimicrobial Resistance", are now available for member comment.

After the member comment period, the document will be reviewed by relevant committees and they will make a recommendation to the AABP Board of Directors to renew, revise or rescind the guideline or position statement.

You can find the currently open position statements at https://aabp.org/resources/AABP_Position_Statements.asp, and just click on them to comment. **All comments are due March 31, 2019 by 5pm EST.**

Nominations Sought for 2019 Cattle Production Veterinarian Hall of Fame

Nominations are now being sought for the 2019 Cattle Production Veterinarian Hall of Fame (CPVHoF). The deadline for nominations is April 1, 2019. One beef and one dairy veterinarian will be inducted into the Hall of Fame.

Established in 2011, the CPVHoF honors the rich traditions of production veterinary medicine and the individuals who have made a lasting impact on the profession. Through early mornings, late nights and harsh weather conditions, veterinarians are a steadfast and essential part of cattle production. Inductees are true pioneers whose achievements span their entire careers.

The Hall of Fame is sponsored by Merck Animal Health, the American Association of Bovine Practitioners, the Academy of Veterinary Consultants and *Bovine Veterinarian* magazine. Inductees will be honored at the 2019 52nd American Association of Bovine Practitioners Annual Conference on Sept. 13, 2019, in St. Louis, Mo.

Email nominations to Brent D. Meyer DVM, MS, Brent.meyer@merck.com.

Appl Anim Behaviour Sci January 2019
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Relationships between Feeding Behaviour, Activity, Dominance and Feed Efficiency in Finishing Beef Steers

M. Haskell*, J. Rooke, R. Roehe, S. Turner, J. Hyslop, A. Waterhouse, C, Duthie

To increase the profitability and sustainability of beef production systems, the use of animals with high feed efficiency is preferred. Efficient animals eat less than their peers for the same or better growth. This efficiency can be measured using feed conversion ratios (FCR) and residual feed intake (RFI) parameters. However, the biological mechanisms, particularly those related to the animal's behaviour and personality, are poorly understood. An individual animal's behaviour, such as its activity levels, may contribute to efficiency. Feed intake is also a factor in efficiency, and therefore, social dominance rank may also indirectly affect efficiency through its influence on feeding behaviour. This experiment investigated the effects of dominance on feeding behaviour, as well as of dominance and activity on average daily gain (ADG), FCR and RFI in two breeds of beef cattle. The study used a 2 × 2 design with 80 cattle of two breed-types (Charolais-cross (CHx) (n = 41) and Luing (n = 39)) and two diets (a concentrate-based diet (CONC) and a mixed forage and concentrate diet (MIXED)). For each individual steer, FCR and RFI were measured over a 56-day performance test. Feed intake, patterns of feeding behaviour, activity and dominance were also measured. Feed intake was affected by dominance, with more dominant steers having significantly higher dry matter intakes (P = 0.001) and feeding rates (P = 0.006) suggesting that dominant animals had priority of access to the feeders. Steers with higher ADG had higher intakes and performed more standing bouts. Steers with better FCR values performed more standing bouts and younger animals had better FCR. For RFI there was also an interaction between breed and variation in length of the feeding events, showing that Luing steers with more consistent feed bout lengths had better RFI, with no association shown for CHx steers. There was no direct effect of dominance on ADG, FCR or RFI. However, the effect of dominance on feed intake suggests that measures of performance in any study may be affected by feeder-space allocation. The

associations between standing bouts and feeding bouts with efficiency measures also suggest that individual animal behavioural characteristics influence efficiency and that overall efficiency of all animals may be improved by allowing animals to express individual patterns of behaviour.

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Vet Immunol Immunopathol January 2019
Vol. 207, pp. 46-52

Frequency of Bovine Viral Diarrhea Virus Detected in Subpopulations of Peripheral Blood Mononuclear Cells in Persistently Infected Animals and Health Outcome

S. Falkenberg*, R. Dassanayake, P. Walz, E. Casas, J. Neill, J. Ridpath

Bovine viral diarrhea viruses (BVDV) cause acute and persistent infections. Acute infection results in generalized immunosuppression characterized by a decrease in circulating lymphocytes as a result of depletion of CD4+ and CD8 + T cell populations. Persistent infection with BVDV is the result of immune tolerance and is generally not associated with lymphocytopenia. The health outcome of persistently infected (PI) calves varies widely; some die of mucosal disease, some succumb to ill thrift and others appear normal and survive to adulthood. Detection of BVDV at the single lymphoid cell level is important to the study of subpopulations of peripheral blood mononuclear cells (PBMC) during BVDV infections, however there are few methods available for the detection and quantification of BVDV at this level. To circumvent this difficulty, a novel flow cytometry-based PrimeFlow RNA assay using in-situ detection of BVDV was developed. This assay was used to evaluate differences in viral distribution within subpopulations of PBMC over time in PI calves carrying one of two different species of BVDV (type 1 and type 2). Calves were sampled at 3 different time points approximately one month apart. During the course of the study, a subset of the calves died from ill thrift. Mucosal disease was not indicated in any of the deaths. Using RNA probes specific for the BVDV Npro-Erns coding regions for each respective virus, BVDV RNA was detected in all PBMC of PI that appeared clinically healthy. Calves that succumbed to ill thrift were found to have no or little virus in T cells. The clearance of virus from T cells suggests a breakdown in immune tolerance in these calves. This is the first report of a pattern observed in the viral load in the T cell subpopulations and survival in PI calves.

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Theriogenology March 2019
Vol. 126, pp. 187-190

Lack of Bovine Leukemia Virus Transmission During Natural Breeding of Cattle

O. Benitez*, J. Roberts, B. Norby, P. Bartlett, J. Maeroff, D. Grooms

Bovine leukosis is a chronic lymphoproliferative disorder that leads to significant economic losses in the beef and dairy industries. The major route of virus transmission is believed to be iatrogenic through the transfer of blood containing infected lymphocytes. In addition, BLV proviral DNA has been identified in nasal secretions, saliva, milk, colostrum, semen and smegma; however, natural transmission of BLV through these secretions has not been clearly demonstrated. The use of bulls for natural breeding has been identified as a risk factor in BLV infected dairy herds. However, the risk of BLV-infected bulls transmitting the virus is unknown. The objective of this study was to evaluate the potential for BLV transmission during natural breeding between a BLV-infected bull and uninfected heifers. Forty healthy, BLV seronegative, and proviral-negative beef heifers were randomly assigned to one of two groups: control heifers (n = 20) exposed to a BLV seronegative and proviral negative bull and challenged heifers (n = 20) exposed to a BLV seropositive and proviral-positive bull. Each group was housed with the bull for a period of 38 days in a 5-acre pasture to replicate the housing of commercial beef cattle during the breeding season. Blood samples were collected from heifers at −60, −30 and 0 days prior to breeding and day 30, 60 and 90 after the breeding period ended. Blood samples were tested for BLV antibodies by ELISA and BLV proviral DNA by CoCoMo-qPCR. New infection was not detected by ELISA or CoCoMo-qPCR in any of the challenge or control heifers at any time point during the study. Based on these results, BLV infected bulls that are healthy and aleukemic may not be a significant risk of BLV transmission during a defined breeding season.

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DAIRY

J Dairy Sci January 2019
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Evaluation of Tetracycline in Milk Following Extra-label Administration of Topical Tetracycline for Digital Dermatitis in Dairy Cattle

G. Cramer*, L. Solano, R. Johnson

Digital dermatitis (DD) is a painful infectious foot lesion commonly treated topically with extra-label tetracycline. Our objectives were to determine the concentrations of tetracycline in milk and plasma and to calculate a

withdrawal interval following topical application at various doses. Another objective was to evaluate agreement between tests for measuring tetracycline in milk. A randomized block trial was conducted on 2 farms, where 50 cows with active DD lesions on 2 feet were allocated to 1 of 5 treatment groups (n = 10 cows per group). Treatment groups consisted of topical applications of tetracycline hydrochloride, in a paste or as a powdered form under a bandage, at 3 different dosing levels (2, 5, and 25 g) on each of the 2 affected feet. Following enrollment and treatment, samples were collected from milk, teat skin, and blood every 8 to 24 h for up to 7 d postdosing. Concentrations of tetracycline were measured by liquid chromatography-mass spectrometry and milk samples were further tested using the Charm ROSA TET test (Charm Sciences Inc., Lawrence, MA). Tetracycline was present in milk, plasma, and teat skin from all treatment groups. Tetracycline concentrations varied depending on time of sampling, method of application, and dosing level. At 8 h post-treatment, 11% of cows had tetracycline present in milk higher than 100 ng/mL (ppb) but none higher than 300 ng/mL. The 25-g treatment group had the longest estimated withdrawal interval, the highest observed concentrations (210-244 ng/mL) of tetracycline present in milk, and the longest observed consecutive period of tetracycline presence (from 8 to 72 h) among all treatment groups. Compared with liquid chromatography-mass spectrometry, the Charm test had a sensitivity of 77 and 100% for measuring tetracycline in milk at ≥30 and ≥100 ng/mL, respectively. Post-treatment samples of the teat skin were taken from 15 cows on 6 occasions, and every cow had tetracycline present in at least 1 of those 6 samples. This confirms an association between topical DD treatment with tetracycline and contamination of the teat. A total of 22% of blood samples had detectable tetracycline, and the majority (63%) occurred at 8 h post-treatment. At 100 ng/mL, the estimated cow-level milk withdrawal interval ranged from 0 to 70 h. At 300 ng/mL, the estimated cow-level withdrawal interval ranged from 0 to 34 h, and was 0 h at the bulk tank level. We recommend that conservative measures be adopted after extra-label use of topical tetracycline for DD treatment, including using a low dose and strategic post-treatment testing for tetracycline-class drugs in milk.

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Prev Vet Med February 2019
Vol. 163, pp. 7-13

Udder and Teat Conformational Risk Factors for Elevated Somatic Cell Count and Clinical Mastitis in New York Holsteins

A. Miles*, J. Mcart, F. Leal Yepes, C. Stambuk, P. Virkler, H. Huson

Our primary objective was to identify udder and teat conformational risk factors associated with the occurrence of elevated somatic cell count (SCC) and clinical mastitis using a prospective cohort study design with careful assessment of exposure and disease outcomes. Mastitis prevalence was evaluated by parity across 6 sampling periods representing key physiological transitions during lactation: 0–1 day in milk (DIM), 3–5 DIM, 10–14 DIM, 50–60 DIM, 90–110 DIM, and 210–230 DIM. Cows were scored for front and rear teat length, width, end shape, and placement, fore udder attachment, udder cleft, udder depth, rear udder height, and rear udder width. Two independent multivariable logistic regression models were used to generate odds ratios (OR) for elevated SCC (≥ 200,000 cells/ml) and farm-diagnosed clinical mastitis. We identified that loose fore udder attachment (reference level: strong fore udder attachment, OR = 2.1, 95% confidence interval (CI) = 1.2–3.8) and flat teat end shape (reference level: round teat end shape, OR = 1.4, 95% CI = 1.1–1.9) increased the odds of an elevated SCC event, whereas a negative California Mastitis Test score at 0–1 DIM decreased the odds of an elevated SCC event (OR = 0.6, 95% CI = 0.4 to 0.8). Loose fore udder attachment (reference level: strong fore udder attachment, OR = 3.7, 95% CI = 1.3–10.7), flat teat end shape (reference level: round teat end shape, OR = 1.5, 95% CI = 1.0–2.4), low rear udder height (reference level: intermediate rear udder height, OR = 2.8, 95% CI = 0.3–6.2), and increasing rear teat width (OR = 2.2, 95% CI = 1.2–4.4) heightened the odds of developing clinical mastitis. We identified that within our study cohort, loose fore udder attachment and flat teat ends had an important association with increased odds of both an elevated SCC event and clinical mastitis diagnosis. The identification of these udder and teat conformational risk factors for mastitis can provide farmers an effective and inexpensive tool to manage mastitis.

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Prev Vet Med February 2019
Vol. 163, pp. 68-78

Predictive Models for Early Lactation Diseases in Transition Dairy Cattle at Dry-off

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During the transition period, dairy cattle undergo tremendous metabolic and physiological changes to prepare for milk synthesis and secretion. Failure to sufficiently regulate these changes may lead to metabolic stress, which increases risk of transition diseases. Metabolic stress is defined as a physiological state consisting of 3 components: aberrant nutrient metabolism, oxidative stress, and inflammation. Current monitoring methods to detect cows experiencing metabolic stress involve measuring biomarkers for nutrient metabolism. However, these biomarkers, including non-esterified fatty acids, beta-hydroxybutyrate, and calcium are typically measured a few weeks before to a few days after calving. This is a retroactive approach, because there is little time to integrate

interventions that remediate metabolic stress in the current cohort. Our objective was to determine if biomarkers of metabolic stress measured at dry-off are predictive of transition disease risk. We designed a prospective cohort study carried out on 5 Michigan dairy farms (N = 277 cows). We followed cows from dry-off to 30 days post-calving. Diseases and adverse outcomes were grouped in an aggregate outcome that included mastitis, metritis, retained placenta, ketosis, lameness, pneumonia, milk fever, displaced abomasum, abortion, and death of the calf or the cow. We used best subsets selection to select candidate models for four different sets of models: one set for each component of metabolic stress (nutrient metabolism, oxidative stress, and inflammation), and a combined model that included all 3 components. We used model averaging to obtain averaged predicted probabilities across each model set. We hypothesized that the averaged predictions from the combined model set with all 3 components of metabolic stress would be more effective at predicting disease than each individual component model set. The area under the curve estimated using receiver operator characteristic curves for the combined model set (0.93; 95% confidence interval [CI] = 0.90–0.96) was significantly higher compared with averaged predictions from the inflammation (0.87; 95% CI = 0.83–0.91), oxidative stress (0.78; 95% CI = 0.72–0.84), and nutrient metabolism (0.73; 95% CI = 0.67–0.79) model sets ($p < 0.05$). Our results indicate that it may be possible to detect cattle at risk for some transition diseases as early as dry-off. This has important implications for disease prevention, as earlier identification of cows at risk of health disorders will allow for earlier implementation of intervention strategies. A limitation of the current study is that we did not perform external validation. Future validation studies are needed to confirm our findings.

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