**DECEMBER 2018**

# Newsletter

AMERICAN ASSOCIATION OF BOVINE PRACTITIONERS

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## THE PRESIDENT'S MESSAGE

### James Herriot Revisited

*"Herriot charms because he delights in life, embraces it with sensitivity and gust and writes with grace. All Creatures Great and Small may well be the happiest book of the year."*
The New York Times Book Review

It was 1979 and *All Creatures Great and Small*, by James Herriot, was immensely popular. This book, first published in 1972, and several sequels, were best sellers and romanticized rural veterinary practice for a whole generation of readers. It's likely that not a single veterinary school applicant had failed to read Herriot's books prior to the application and interview process.

Siegfried Farnon, James' boss, had a younger brother, Tristan, who was lacking in the over-achieving tendencies of his older brother. He was having great difficulty getting through his veterinary school curriculum and seemed to be a "disaster waiting to happen" as he continuously partied, slacked off at work and went from one "wreck" to another, much to the dismay of Siegfried. Despite his early exploits, Tristan went on to a highly successful veterinary career.

Tristan, a.k.a. Brian Sinclair, was the keynote speaker for the 1979 AABP Annual Conference in San Antonio. As president of the Texas A&M AABP student chapter, I had the privilege of securing him to address our group while he was in Texas. We made the appropriate arrangements for Tristan to speak in one of the veterinary school lecture rooms, with all CVM students invited. Word leaked about his scheduled appearance at the CVM, and soon we were receiving multiple requests from undergraduate pre-veterinary students from main campus to hear him speak. To accommodate the swelling interest and numerous requests, we moved the presentation to the largest meeting room on the A&M campus in the Rudder Auditorium. His presentation filled the auditorium to capacity and I would bet this was the largest audience to ever attend a student chapter AABP meeting in Texas A&M history!

The highlight of that experience for me was after the meeting, when Brian and his wife, Sheila, invited me to the hotel bar for a nightcap. He was a remarkable storyteller and I regretted the need to depart a few hours later. The Sinclairs invited me to visit their home in Yorkshire, but I never made the trip due to a busy practice, new family and financial considerations. Brian Sinclair passed away in 1988.

Planning for my trip to the British Cattle Veterinary Association (BCVA) meeting in England this October brought back memories of my time spent with Tristan Farnon and the whole "James Herriot phenomenon." I

decided to reread *All Creatures Great and Small*. It had been over 40 years since I last read the classic. My first experience reading the book was as an aspiring pre-veterinary student. Now, after 38 years as a practitioner, academic clinician, industry veterinarian and rancher, my perspective was quite different. Many of the stories had been forgotten and I thoroughly enjoyed each and every chapter.

Several quotes from Herriot's earliest days in practice were interesting and perhaps timeless. On his first day in practice after examining the pharmacy, James remarked, "Some of the bottles on the shelves fell short of the ethical standards I had learned in college."

After a particularly long but rewarding day, he reminisced on a quote from one of his college professors. "If you decide to become a veterinary surgeon, you will never grow rich, but you will have a life of endless interest and variety."

Tuberculosis (TB) testing was a big part of the veterinary practice in Herriot's days. In one of the last chapters, James spends his honeymoon with his new bride, Helen, TB testing. I found it ironic on my recent visit to the U.K., that TB is a still a huge issue. Currently, there is a monumental effort to control the disease and deal with badgers and their potential role in transmission.

One of my favorite stories was when James and Siegfried were discussing an article in the *Darrowby and Houlton Times* over breakfast stating that "farmers have no feelings for their animals." One question posed was, "Can the dairy farmer milking maybe 50 cows become really fond of any of them, or are they just milk-producing units?"

For perspective, 50 dairy cows was a very large operation during the late 1930s and early 1940s. It might be equivalent to 500 or even 5,000 cows today.

Herriot goes on to tell the story about John Skipton of Dennaby Close, the largest farmer in the area, and how he cared for his animals despite the relatively large size of his operation. On this farm, James describes in detail how for 12 years he provided the very best nutrition and dental care for two old work horses, put out to pasture in their 20s after a productive life.

The moral of the story then, and as it remains today, is that the size of operation is not inversely proportional to the level of compassionate care and sound animal welfare practices. Regardless of operation size, we can love the people, love the cattle, love the land… just like James Herriot.

**Send a Cow**

An unexpected experience at the BCVA meeting in October was my visit to the Send a Cow exhibit in the trade show. I learned how Send a Cow started over 30 years ago when some English dairymen sent dairy cows to Africa.

In 1988, many U.K. dairy farmers were outraged by strict European Union milk quotas which forced them to throw away good quality milk and even slaughter healthy dairy cows. At the same time, families in Uganda were recovering from the country's brutal civil war which had destroyed farm land and livestock. Motivated to help, a small group of dairy farmers decided to donate some of their own cows to rural Ugandan families. On July 4, 1988, 32 dairy cows were flown from Gatwick airport to Entebbe, Uganda, and given to struggling families. With nutritious milk to drink and sell and manure to nourish the soil and boost crop yields, the families and the cows thrived; the charity Send a Cow was born.

The charity continued to send livestock from the U.K. to Uganda until 1996 when the bovine spongiform encephalopathy crisis took hold. From then on, Send a Cow sourced all livestock from within Africa. Since the early days, all livestock was provided alongside comprehensive training in animal husbandry and welfare, ensuring the animals were well cared for and productive for the families.

Today, Send a Cow works in six countries in Africa and provides a proven package of support and training in farming, hygiene, business skills and gender equality. Working with families for up to five years, Send a Cow helps people to grow their own food, earn an income and lift themselves out of poverty permanently.

The charity now does much more than provide cows and works with rural communities to make the most of their most precious resource – the soil beneath their feet. Over two million people across Africa have been supported since Send a Cow began.

Representatives from Send a Cow invited me and my wife, Mandy, to stop in their main office in Bath at the end of our England/Wales trip. There we were treated to an hour-long presentation about their many projects in Africa.

See more about the Send a Cow program on page 5.

Dr. Glenn Rogers

**FUTURE MEETINGS**

**American Association of Bovine Practitioners**

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| **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 |

**AABP Recent Veterinary Graduate Conference**

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| 2019 | Columbus | February 7 – 9 |

**World Association for Buiatrics**

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| 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:

- AVMA stakeholder meeting on pentobarbital residues in rendered products, Chicago, Ill. – Executive Vice President
- AVMA Board of Directors meeting, Schaumburg, Ill., Executive Vice President
- AABP Veterinary Practice Sustainability workshop planning meeting, Harrisburg, Pa. – Executive Vice President
- Academy of Veterinary Consultants Winter Conference, Kansas City, Mo. – Executive Vice President, President

## CONTINUING EDUCATION

**2019 AABP Recent Veterinary Graduate Conference RACE-Approved**

The second AABP Recent Veterinary Graduate Conference targeted for those AABP members who have graduated between 2011 and 2018 will take place Feb. 7-9, 2019, in Columbus, Ohio. This program has been approved for 51.25 hours of continuing education credit in jurisdictions that recognize RACE approval, with 23.50 hours available to individual attendees.

The theme, "Break Through to Excellence", was developed to offer newer graduates information and skills

to improve their practice offerings. New to this conference will be three preconference seminars on Feb. 7 including breeding soundness exams, practice valuation and DairyComp 305. The scientific sessions on Feb. 8-9 will include general, beef and dairy sessions, featuring topics for improving skills in clinical practice and business management.

Find out more and register under the Conference tab (login required) at www.aabp.org, **by Jan. 16, 2019**.

## AABP NEWS

### Applications Sought for Manage Your Rural Practice for Success Workshop Grants

AABP is seeking applications for the Mange Your Rural Practice for Success Workshop grants for two, three-day intensive practice analysis workshops to be held in St. Louis in the spring of 2019 and 2020. Following similar successful workshops held in 2017 and 2018, the upcoming workshops, funded from a USDA-NIFA grant, have added human resources management topics to the curriculum.

Applicant requirements include U.S. citizenship, veterinary school graduation from 2009-2018 (preference given to those who graduated five or fewer years ago), at least 10% of practice income from food animals, practicing in or adjacent to a USDA-designated Veterinary Medicine Loan Repayment Program area and more. Successful applicants will receive a $900 stipend each year to attend the training.

Find a detailed description of the program, as well as an application, at http://aabp.org/next_gen/. **Applications are due by December 15, 2018 (5:00 p.m. EST).**

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### AABP Mentorship Program

The AABP Membership Committee invites you to be part of the AABP Mentorship Program. We developed the program with the goal of retaining young veterinarians in bovine practice and within AABP. We have recognized that mentorship is so critical to success in the veterinary profession.

The Membership Committee has worked diligently to develop a program that fits the needs of both the younger members of the profession and those who feel strongly about providing mentorship to that group. We hope that you will consider taking part in the program either as a mentor or mentee. Your participation is critical to the future success of bovine practice and AABP.

Find out more information on the AABP Mentorship Program, its purpose, how it is structured and the benefits to mentors and mentees at http://aabp.org/jobs/mentorship/.

Dr. Gabe Middleton
Chair, AABP Membership Committee

### AABP Human Resources Management Survey

How do you manage people in your veterinary practice? People have a big impact on your practice. How do you attract good people to work for you? How do you keep them? What impact does all this have on your practice?

AABP is conducting a survey of veterinarians to measure human resource practices and what impact they have on people and the business. Your voice as an AABP member is important and we want to hear from you. We want your input whether you are a practice owner or associate. Please complete the Veterinary Professional Human Resource Survey at http://aabp.org/survey/hr_survey/. You must be logged on to the AABP website to access the survey.

The survey only takes about 10 minutes to complete and **closes Dec. 19**, so don't delay. Thanks for your response!

AABP Veterinary Practice
Sustainability Committee

## DEADLINE REMINDERS

### Call for 2019 AABP Annual Conference Preconference Seminar Proposals

The AABP program committee is calling for Preconference Seminar proposals for the 2019 52nd AABP Annual Conference to be held Sept. 12-14 in St. Louis, Mo. The preconference seminars will take place Sunday, Sept. 8 through Wednesday, Sept. 11. Preconference seminars provide in-depth instruction on a subject and most are limited to 30 attendees. Each year, old favorites as well as new seminars on beef, dairy and practice management subjects, are offered. Priority will be given to proposals which include:

1. Seminar concepts recommended by standing AABP committees.
2. Seminars receiving good attendance and reviews in 2017 and 2018.
3. Seminar content revision and upgrades, particularly with rotation of speakers in repeat seminars.
4. Originality tempered with reality in new proposals to be considered.

Find proposal details and more information in the purple links on the AABP homepage at www.aabp.org, or directly at http://aabp.org/meeting/preconference.asp. Online documents include a budget calculator, seminar description and faculty contact information, all of which must be downloaded, completed and emailed **by Dec. 31, 2018,** to Dr. Carie Telgen (carietelgen@gmail.com) and Dr. Fred Gingrich (fred@aabp.org). Contact Drs. Telgen or Gingrich with questions.

**Call for 2019 AABP Foundation Research Proposals**

The AABP Foundation announces two grants supporting clinical research in cattle. Each grant will be for up to $25,000. Proposals may address beef, dairy or both, and an effort will be made to award one beef and one dairy grant. More than two projects may be funded, but the total amount awarded will be $50,000. Proposals should be aimed at providing practical solutions that cattle veterinarians can utilize in beef or dairy production environments.

Each proposal should include a title and description of the proposed study, experimental protocol, a budget and a list of the investigators with biographical sketches.

Salary replacement for faculty members, post-docs or graduate students, indirect costs, or scientific equipment will not be supported. At least one of the investigators must be an AABP member. Projects likely to be funded by corporate or industry sponsors are not likely to be prioritized. In judging between proposals of similar merit, preference will be given to proposals from researchers who are starting their careers or from private practitioners, and proposals for which AABP Foundation funds can serve as seed money to attract other grants.

For more details and a proposal template, visit http://foundation.aabp.org/research_proposal/default.asp.

Twenty percent of the granted funds will be withheld until the results are presented at an AABP annual conference and evidence of submission to a peer-reviewed publication is received.

Proposals must be received **by 5:00 pm (EST), December 10, 2018**. Proposals must be submitted online at http://foundation.aabp.org/research_proposal/default.asp.

Email Dr. Virginia Fajt (vfajt@cvm.tamu.edu) or Dr. Fred Gingrich (fred@aabp.org) if you have questions.

View previous AABP Foundation grant recipients at http://foundation.aabp.org/research_proposal/Funded_Proposals.asp.

## AABP COMMITTEE REPORTS

**Using COA to Improve Practice Performance and Profitability**

One of the situations we encounter in the Next Generation Veterinary Practice Analysis Workshops is that there are practices that would like to answer the following questions, however, they are unable to answer them due to insufficient detail in their bookkeeping.

- What does it cost to keep our practice vehicles on the road, versus how much income does our practice generate from call fees?
- How much income do we generate from equine, small ruminant, companion animal or swine relative to the other species categories?
- What is the gross margin on food animal and companion animal product sales?
- How much gross margin do we generate from the use of outside commercial lab analysis?
- How much income is generated from a specific service area such as embryo transfer (ET) or breeding soundness exams (BSE) and is it generating a profit?

If you are not able to analyze your records and address these types of issues, it may be because your chart of accounts (COA) is a limiting factor. When some practices' COA are developed, the goal is to gather data to aid us in paying taxes, and see from the 30,000-foot view if the practices are profitable. With a new year right around the corner, it may be a good time for some of us to think about adjusting our bookkeeping COA so that more information can be gleaned from the COA, and decisions can be made based on facts instead of emotion.

With changes in some practices' COA, you may address questions such as:

- Should we increase call fees?
- Should we discontinue having veterinarians drop off products?
- We realize we cannot increase call fees, but can we increase fees for services while on the farm to address this expense related to call fees?
- Much of the call fee-related expenses come from calls received later in the day; should we have a two- or three-tiered call fee structure based on call-in time?
- Does it pay for us to continue addressing certain species such as small ruminants or swine?
- How profitable is ET in our practice?
- Should we do more BSEs or ET?
- Do we need to adjust the fee schedule for certain service areas such as BSEs or ET?
- Should we be doing more lab work in-house?
- Should we use more outside lab services?

AABP practices are very diverse, and no one COA will suit all practices. For a start, areas you may want to address are various farm animal species incomes, specific services, call fees, product sales (direct or drop-shipped), companion vs. farm animal incomes for services and product sales, lab providers, and technician-generated income.

A few years ago, AABP partnered with Marsha Heinke, CPA, who previously helped to develop a COA for the American Association of Equine Practitioners and the American Animal Hospital Association, to develop an in-depth sample COA for AABP for use with QuickBooks. The chart is very inclusive and it can be used as-is, or certain accounts can be closed or deleted. In addition, Heinke developed a Revenue and Expense Statement of Accounts in Excel that may provide ideas for accounts with any bookkeeping software.

If you feel a need to better evaluate your practice in the future, a good time to address this is to make changes in your bookkeeping COA before you venture too far into 2019.

You can find the links to the QuickBooks Chart of Accounts and the Revenue and Expense Statement of Accounts on the Veterinary Practice Sustainability

Committee page of the AABP website at http://www.aabp.org/members/Veterinary%20Practice%20Sustainability.asp.

With some analysis of our records, we can make better decisions on how to improve our veterinary practices as businesses in 2019.

Submitted by the AABP
Veterinary Practice Sustainability Committee

## GENERAL INFORMATION

### Send a Cow

As referenced in the President's Message on page one, key facts about the Send a Cow organization include:

- Send a Cow currently works in six African countries: Burundi, Ethiopia, Kenya, Rwanda, Uganda and Zambia.
- After working with Send a Cow, 97% of farmers believe they can provide enough food and income for their families' needs from their farms.
- Over two-thirds of the people Send a Cow supports are women.
- By selling surplus farm produce, families' income often increases six-fold.

**A partnership against hunger**

In 2017, the BCVA celebrated its 50th anniversary and their president, Andrew Cobner, set an ambitious challenge of raising £50,000 (~ $64,277) to send a virtual herd of cows to Africa. BCVA members across the U.K. came together to fundraise for Send a Cow. Over the year, BCVA members participated in numerous fundraising events and the members raised just over £50,000 in a year – a remarkable achievement.

Together, members of the BCVA and the AABP can make a significant difference to the lives of farming families. All of the funds raised can support families with the provision of livestock that will provide milk and manure, along with training in animal husbandry, welfare, nutrition and veterinary care.

Send a Cow will be a new exhibitor at the 2019 52nd AABP Annual Conference in St. Louis. To learn more about Send a Cow and how you can help go to https://www.sendacow.org/.

As we enter this Christmas season of giving, perhaps some will take the opportunity to donate financial and/or time resources to this organization.

Dr. Glenn Rogers

## BEEF

J. Vet Pharmacol. Therap. May 2007
Vol. 30, pp. 305-313

**Attenuation of Acute Plasma Cortisol Response in Calves Following Intravenous Sodium Salicylate Administration Prior to Castration**

J. Coetzee*, R. Gehring, A. Bettenhausen, B. Lubbers, S. Toerber, D. Thomson, B. Kukanich, M. Apley

Pain associated with castration in cattle is an animal welfare concern in beef production. This study examined the effect of oral aspirin and intravenous (i.v.) sodium salicylate on acute plasma cortisol response following surgical castration. Twenty bulls, randomly assigned to the following groups, (i) uncastrated, untreated controls, (ii) castrated, untreated controls, (iii) 50 mg/kg sodium salicylate i.v. precastration and (iv) 50 mg/kg aspirin (acetylsalicylic acid) per os precastration, were blood sampled at 3, 10, 20, 30, 40, 50 min and 1, 1.5, 2, 4, 6, 8, 10 and 12 h postcastration. Samples were analyzed by competitive chemiluminescent immunoassay and fluorescence polarization immunoassay for cortisol and salicylate, respectively. Data were analyzed using noncompartmental analysis, a simple cosine model, anova and t-tests. Intravenous salicylate Vd(ss) was 0.18 L/kg, ClB was 3.36 mL/min/kg and t1/2λ was 0.63 h. Plasma salicylate concentrations above 25 μg/mL coincided with significant attenuation in peak cortisol concentrations (P = 0.029). Peak salicylate concentrations following oral aspirin administration was <10 μg/mL and failed to attenuate cortisol response. Once salicylate concentrations decreased below 5 μg/mL, cortisol response in the castrated groups was significantly higher than uncastrated controls (P = 0.018). These findings have implications for designing drug regimens to provide analgesia during routine animal husbandry procedures.

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J Vet Intern Med August 2018
doi: 10.1111/jvim.15257

**Inter-rater Agreement and Reliability of Thoracic Ultrasonographic Findings in Feedlot Calves, with or without Naturally Occurring Bronchopneumonia**

S. Buczinski*, C. Buathier, A. Bélanger, H. Michaux, N. Tison, E. Timsit

Thoracic ultrasonography (TUS) can be used to assess the extent and severity of lung lesions associated with bronchopneumonia (BP) in feedlot cattle. The objective of this trial was to assess inter-rater agreement and reliability of TUS findings in feedlot cattle, with or without naturally

occurring BP. Feedlot steers with (n = 210) or without (n = 107) clinical signs of BP were assessed by TUS in a previous case-control study. A random sample of 50 TUS videos (16-s duration) were scored by 6 raters with various levels of TUS expertise. Lung consolidation, comet tail artifacts, pleural irregularity and effusion were scored. Inter-rater agreement was assessed using raw percentage of agreement (Pa), Cohen's and Fleiss' Kappa (κ), and Gwet agreement coefficient (AC1). Intra-class correlation (ICC) was determined for variables with continuous measurements (mixed factorial design). Median (interquartile range [IQR]) Pa were 0.84 (0.80-0.89), 0.82 (0.80-0.87), 0.62 (0.53-0.67), and 0.82 (0.75-0.86) for presence of lung consolidation, comet tails, pleural irregularity, and pleural effusion, respectively. For the same lesions, Fleiss κ (95% confidence intervals [CI]) were 0.67 (0.49-0.86), 0.56 (0.33-0.80), 0.20 (-0.05 to 0.44), and 0.36 (0.10-0.61), respectively. AC1 were 0.68 (0.51-0.86), 0.73 (0.58-0.89), 0.21 (-0.01 to 0.44), and 0.71 (0.51-0.92), respectively. Moderate reliability was found among raters for all quantitative variables (ICC ranged from 0.52 to 0.70). Inter-rater agreement was good for presence of lung consolidation, comet tails and pleural effusion (based on Pa and AC1) but was slight to poor for pleural irregularity.

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Vet Micro September 2018
Vol. 223, pp. 126-133

**Effects of Transportation to and Co-mingling at an Auction Market on Nasopharyngeal and Tracheal Bacterial Communities of Recently Weaned Beef Cattle**

C. Stroebel*, T. Alexander, M. Workentine, E. Timsit

The objective was to study effects of transportation to and co-mingling at an auction market on nasopharyngeal and tracheal bacterial communities of feedlot cattle. Two groups of 30 Angus-cross heifers were studied from weaning to 28 d after arrival at a feedlot. For each group, half the heifers were either transported directly to a feedlot after weaning (RANC) or transported to and co-mingled at an auction market for 24 h before being placed in a feedlot (AUCT). Deep nasal swabs (DNS) and trans-tracheal aspirates (TTA) were collected at weaning (d0) and at on-arrival processing at the feedlot (d2). At 7 (d9) and 28 d (d30) after arrival, DNS were repeated. The DNA was extracted from DNS and TTA and the V4 region of the 16S rRNA gene sequenced (MiSeq). Alpha diversity analysis did not reveal differences between AUCT and RANC. However, bacterial diversity decreased over time in the nasopharynx, especially at d9. Although beta-diversity was not different between AUCT and RANC, interval after arrival and feedlot where heifers were placed affected composition of the nasopharyngeal bacterial communities. In both groups, a large increase in Mycoplasma was observed after arrival; in one group, Mycoplasma bovis was dominant at d9 and remained dominant until d30. However, in the other group, Mycoplasma dispar dominated at d9 and was replaced by Moraxella at d30. We concluded that transportation to and co-mingling at an auction market for 24 h did not significantly influence diversity or composition of nasopharyngeal or tracheal bacterial communities.

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Anim Reprod Sci September 2018
Vol. 196, pp. 69-76

**Role of Progesterone Concentrations during Early Follicular Development in Beef Cattle: II. Ovulatory Follicle Growth and Pregnancy Rates**

F. Abreu*, T. Geary, M. Coutinho Da Silva, L. Cruppe, M. Mussard, C. Madsen, T. Martins, G. Bridges, B. Harstine, M. Day

Two experiments were conducted to investigate the role of relatively lesser and greater progesterone (P4) concentrations during early follicular development on ovulatory follicle growth and pregnancy rate in beef cattle. In Experiment 1, time of ovulation was synchronized with the 5 d CO-Synch + CIDR (Controlled Internal Drug Release) program in multiparous cows (n = 241). Six days after the 2nd GnRH injection of the pre-synchronization program (d 0), ablation of follicles ≥ 5 mm in the ovaries was performed and cows were assigned to receive either a previously used CIDR and 2x-25 mg PGF2α doses 8 h apart (LoP4), or a new CIDR (HiP4). On d 5, CIDR were removed from all cows, 2x-25 mg PGF2α were administered, and estrous detection tail paint was applied. Timed artificial insemination (TAI) was performed on d 8. On d 5, P4 concentrations were greater ($P < 0.01$) in the HiP4 (4.9 ± 0.13 ng/mL) than LoP4 (1.0 ± 0.06 ng/mL) treatment group. Conversely, d 5 estradiol (E2) concentrations and follicular diameter were greater ($P < 0.01$) in the LoP4 (5.0 ± 0.23 pg/mL and 8.9 ± 0.20 mm) than HiP4 (1.5 ± 0.12 pg/mL and 7.4 ± 0.15 mm) treatment group. Follicular diameter at TAI (12.0 ± 0.12 mm, Table 1) and TAI pregnancy rate did not differ ($P > 0.10$) between treatment groups. In Experiment 2, a new follicular wave was induced with estradiol benzoate on d -7, and cows (n = 275) were assigned on d 0 to receive 25 mg PGF2α and either have the CIDR replaced with a new CIDR (HiP4) or the used CIDR was left in place (LoP4).Furthermore, all cows received GnRH on d 0. The CIDRs were removed from all cows on d 5 and two doses of -25 mg PGF2α were administered. Estrous detection combined with AI 12 h later (Estrus-AI) was performed for 60 h after CIDR removal with TAI coupled with GnRH administration at 72 h if estrus was not detected. The concentrations of P4 on d 5 were greater ($P < 0.01$) in the HiP4 (2.8 ± 0.10 ng/ml) than LoP4 (1.7 ± 0.05 ng/mL) treatment group. For cows that were detected in estrus after PGF2α administration, estrous response (83.5%) and interval to estrus (55.0 ± 0.5 h) did not differ between treatment groups. Pregnancy rate (combined Estrus-AI and

TAI) that resulted from breeding at the time of the synchronized time of estrus was similar between treatment groups (HiP4: 77.1%; LoP4: 82.3%). In conclusion, differences in P4 concentrations during early follicular development do not effect pregnancy rate in beef cows when the cows are inseminated at the time of a synchronized estrus if the cows have similar intervals of proestrus.

* Department of Animal Sciences, The Ohio State University, Columbus, OH 43210

## DAIRY

Veterinary Journal August 2018
Vol. 238, pp. 10-14

### Evaluation of a Portable Ion-selective Electrode Meter for Measuring Potassium Concentrations in Whole Blood and Plasma of Calves

F. Trefz*, I. Lorenz, P. Constable

An ion-selective electrode (ISE) handheld meter (LAQUAtwin B-731; Horiba) has recently become available for the measurement of potassium concentrations [K+] in biological fluids. The ISE meter has the potential to facilitate the diagnosis and treatment of potassium balance disorders of critically ill cattle. The objective of this study was to characterise the analytical performance of the ISE meter in a study sample of hospitalised calves with a broad range of plasma [K+]. For the purpose of the study, whole blood and plasma samples from 125 calves (age ≤ 3 months) were used for analysis. The accuracy of the meter against the reference method (indirect ISE, Cobas c 311, Roche) was assessed using Passing–Bablok regression and Bland–Altman plots. The [K+] in whole blood as measured by the ISE meter in direct mode ranged from 2.4 to 9.9 mmol/L. The meter measured whole blood [K+] as 3.8% higher than plasma [K+]. Passing–Bablok regression for whole blood [K+] measured by the meter against plasma [K+] determined by indirect potentiometry revealed a linear relationship that was almost identical to the line of identity. However, the Bland–Altman plot indicated that the meter measured plasma [K+] 5.1% lower than the reference method. This result was consistent with analytical differences of direct and indirect ISE methods in respect to variation in the plasma protein concentration. In conclusion, the LAQUAtwin B-731 meter provides an accurate, rapid and low-cost tool for the diagnosis of potassium derangements in critically ill calves, particularly when whole blood samples are analysed.

* Clinic for Ruminants with Ambulatory and Herd Health Services at the Centre for Clinical Veterinary Medicine, LMU Munich, Sonnenstraße 16, 85764 Oberschleißheim, Germany

BMC Vet Res August 2018
doi.org/10.1186/s12917-018-1579-9

### Effect of Different Flooring Types on Pressure Distribution Under the Bovine Claw – An ex vivo Study

B. Oehme*, S. Geiger, S. Grund, K. Hainke, J. Munzel, C. Mülling

Mechanical interactions between hard floorings and the sole of bovine claws can be reasonable to cause traumatic claw lesions. In this ex vivo study, the direct kinetic impact of concrete and three types of rubber mats on the sole of dairy cattle claws was analyzed. In order to apply uniform loads, isolated distal hind limbs of adult Holstein Friesian dairy cows were functionally trimmed according to the Dutch method and attached to a load applicator. Kinetic data were recorded using a thin, foil-based pressure measurement system (Hoof™ System, Tekscan®). On concrete, the load distribution between the lateral and medial claw was less balanced than on the rubber floorings. The loaded area was significantly smaller on concrete (32.2 $cm^2$) compared to all rubber mats (48.3–58.0 $cm^2$). Average pressures ($P_{av}$) and maximum pressures ($P_{max}$) were significantly higher on concrete ($P_{av}$ 44.7 $N/cm^2$; $P_{max}$ 130.3 $N/cm^2$) compared to the rubber floorings ($P_{av}$ 24.9–29.7 $N/cm^2$; $P_{max}$ 71.9–87.2 $N/cm^2$). Pressure peaks occurred mainly in plantar and abaxial parts of the lateral claw and in apical and plantar regions of the medial claw. Load distribution displayed a widely unloaded slope region, but considering the pressure distribution under the claw, none of the zones showed a generally lower pressure exposure. Altogether, rubber floorings lead to a significant mechanical relief of the sole compared to concrete. Furthermore, relevant differences between the tested rubber mats could be determined. Therefore the used system may be applied to compare further flooring types.

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### Relationship between the Pathology of Bovine Intestinal Tissue and Current Diagnostic Tests for Johne's Disease

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Johne's disease is an enteric disease caused by the intracellular pathogen Mycobacterium avium subsp. paratuberculosis (MAP). Upon translocation from the lumen of the small intestine, mycobacteria have the ability to thwart innate defense mechanisms and persist within the macrophage in the lamina propria. In an effort to understand how the pathology of disease is reflected in current diagnostic tests, immunofluorescent (IFA) labeling was performed to quantitate macrophage and MAP numbers in the ileum of infected cattle and correlate results with common methods for diagnosis of MAP infection; including ELISA, IFN-γ assay, RT-PCR, culture of MAP,

and histological classification of tissue sections. Predictive models for clinical and subclinical disease states, histopathology acid-fast (AF), MAP location, granulomatous inflammation and type classifications, as well as macrophage, MAP and macrophages with intracellular MAP IFA labeling were successfully developed. The combination of macrophage number and ELISA were the best predictors of clinical disease state, while macrophage number was the best and only significant predictor of subclinical disease state. Fecal culture and number of MAP were the best predictors of granulomatous inflammation, and of combined AF, MAP location and granuloma type, respectively. Additionally, fecal culture and tissue culture were the best predictors of numbers of macrophages and MAP, respectively, while both ELISA and tissue culture were the best predictors of number of macrophages with intracellular MAP.

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**Modeled Construction and Operating Costs of Different Ventilation Systems for lactating Dairy Cows**

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The objectives were to compare capital costs of building and installation of 7 ventilation systems for adult lactating dairy cow housing and evaluate the energy use and operating cost between systems. A cost model comprising stochastic and parametric modules was created to estimate the number of fans operating each day based on temperature set points; annual profiles of daily maximum, minimum, and average temperatures; ramping functions to transition between seasons; and weather data from 7 locations in the United States. Costs were described as US$ per stall per year and operating costs as US$ (kW·h) per stall per year. Building costs amortized over 10 yr ranged from $246 to $318, where a 16-row cross-ventilated design had the minimum cost and a hybrid design incorporating elements of tunnel and natural ventilation had the maximum cost. Lowering the summer temperature set point from 22.2 to 18.0°C to potentially improve heat abatement for high-producing cows increased cost by $10.10 (101.0 kW·h). On average, an exponential ramping function for transitioning between seasons cost $55.40 (554 kW·h) compared with $61.40 (614 kW·h) for a linear function. A tunnel barn ranged from $79.40 (794 kW·h) to $212.30 (2123 kW·h), and a natural design ranged from $32.60 (326 kW·h) to $81.80 (818 kW·h) in operating costs due to fan selection alone. Cross-ventilated barns benefitted from economies of scale and had similar operating costs as naturally ventilated barns in larger facilities. On average, mechanical systems cost twice as much to operate as natural systems, and operating costs in hotter US climates were approximately double those in milder climates. Selecting a fan with low energy efficiency can increase the operating cost of any ventilation system approximately 2-fold, making fan choice a critical design element.

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