

DAIRY VETERINARY NEWSLETTER

July 2016

Upcoming Extension Meetings in Utah Regarding the New VFD Rules

Four meetings regarding the upcoming Veterinary Feed Directive (VFD) rules are coming up in Utah. There is a flyer enclosed in this newsletter regarding these informative presentations. They are co-sponsored by Utah State Cooperative Extension and IFA (Intermountain Farmers) Feeds.

Times and locations:

- **Vernal:** Western Park, **July 27**, 1 - 3 p.m.
- **Lehi:** Cabela's, **July 28**, 10 a.m. - 12 noon
- **Brigham City:** USU Center, **August 2**, 6 - 8 p.m.
- **Richfield:** Sevier County Administration Building, **August 3**, 6 - 8 p.m.

There will be no charge, and there will be presentations and time for discussion regarding the VFD responsibilities of clients/animal caretakers, feed industry personnel, and veterinarians. The new VFD will take effect on January 1, 2017 and these meetings will address many important aspects of the changes. Hopefully you will be able to attend.

New Information from the World Buiatrics Conference

I recently was fortunate enough to attend and give a presentation at the World Buiatrics Congress in Dublin, Ireland. Some of the other presentations there included:

The interest of dairy farmers in mastitis diagnostics, by Karien Griffioen et al. from the Netherlands

Dutch dairy farmers were surveyed regarding their attitudes and opinions regarding test characteristics they wanted in order to be likely to use a test for either clinical or subclinical mastitis. Herds had to have "> 20 adult cows" to be included. (It has been my impression that dairy herds in Europe have been growing larger, but there must still be many commercial herds with well under 100 cows, it seems.) 459 dairy farmers were reached by phone, and 210 (46%)

agreed to continue on with the survey; 195 were considered to have a “usable questionnaire” at the end. It was not explained why or how the other 15 were excluded, but my first guess is that they did not stay on the phone long enough to complete the survey. There were statistical analyses applied to the results, but they were not described in any detail. Some of the results showed either Relative Risk or Odds Ratio between categories of producers and their likelihood to do something.

Some of the results:

- 34% of the Dutch farmers used bacteriological milk cultures. 2% used this to guide treatment decisions.
- 71% would use a diagnostic test “that would reveal the preferred treatment for clinical mastitis within 12 hours”
- 70% would use a diagnostic test if it was on-farm.
- 58% said the most important reason to use a mastitis diagnostic test was to guide clinical mastitis treatment decisions (see above regarding how few use culture for this reason currently)
- 15% said the most important reason to use a mastitis diagnostic test was to guide dry cow treatment decisions
- Farmers already using culture were 13 times more likely to say that preferred treatment was an important reason than farmers currently not using culture ($P < 0.05$)
- 14%, 28% and 55% respectively were “not interested at all” in a mastitis diagnostic test for clinical mastitis, subclinical mastitis, or dry cow treatment, respectively.
- 2% used PCR.

What should a mastitis diagnostic test tell you?

- 57% said whether antibiotics were needed. 64% said which specific antibiotic was needed.
- 39% said whether “extended therapy” was needed.

What are some other important mastitis test characteristics?

- 50% of farmers (median) said < 8 hours until results.
- 50% of farmers said false positive rate could be no more than 7% (93% specificity).
- 50% of farmers said “less important”, but time to run the test should be 7.5 to 10 minutes, no longer.
- 50% of farmers said that test cost could be no more than \$11.00 - \$16.50 U.S. in order for them to use it. (I have mentioned this several colleagues, and we don’t think that half of U.S. producers would use a test that cost this much. It seems like the “magic number” has remained for many years between \$7.00 and \$10.00 per animal for most producers here to use a test. What do you think?)

A single prolonged milking interval of 24 hours compromises the well-being and health of dairy Holstein cows, by Philipp Kohler et al. from Switzerland and the U.S.

In order to improve their ranking when judged, dairy cattle being shown often have overfilled udders. (24 hours between milkings also begins mammary gland involution and impacts the lactation curve.) This study examined one prolonged milking interval (PMI) of 24 hours, with or without NSAID administration, in early and mid-lactation.

15 Holstein cows were studied; the description suggests that each cow had one early lactation 24 hr PMI and after some time, may have had another so that each cow had an early lactation PMI with NSAID, another with sterile saline placebo administered. Specific NSAID or dosage were not reported. 10 cows had 24 hr PMI again mid-lactation (days in milk not reported). Pedometer, noseband sensor (eating), ultrasound (udder edema), subjective score 0 - 100 for hind limb abduction, and dynamometer (pressure within mammary gland) were used 24 hr before (2X milking) and during the PMI, data collected every 1 or 2 hr. Analyzed data were from the last 6 hr before the next milking of either interval.

In early lactation, cows ate 22 min/hr with 12 hr interval, 16 min/hr with PMI. Hind limb abduction (scores not shown), visible leaking milk (100%), and udder edema (67%) were increased in PMI cows; no 2X milked cows had leaking milk or edema. NSAID did not affect anything except it was associated with no udder edema in PMI cows. During mid-lactation (again, no DIM range reported), the 24 hr PMI was not associated with any differences in eating, walking, leaking or edema compared with 12 hr interval milkings. The authors concluded that “cows’ health and well-being are compromised by a single PMI of 24 hr” (during early lactation).

Discriminating *Staphylococcus aureus* isolates from other common mastitis pathogens in dairy cows with scent dogs, by Carola Fischer-Tenhagen et al. from Germany

For hundreds of years or longer, “smell doctors” used to smell some kinds of human diseases. Some dogs today are used to smell neoplasia in humans, including that not on the skin surface. 10 dogs owned by the university dairy personnel “of various breeds and both sexes” were studied to see whether they could smell specific mastitis pathogens and distinguish them.

Using conventional milk culture, isolates of initially only *Staph aureus*, and later *E. coli*, *Strep uberis*, *Strep dysgalactiae*, *Pseudomonas aeruginosa*, *Enterococcus* spp. and *Candida albicans* were tested for dogs’ recognition. All isolates were confirmed using a MALDI-TOF diagnostic machine as well. A cotton swab was placed on the lid of the culture plate to absorb the smell (for how long was not stated). Alternatively, bacteria were added to 2 ml of bulk tank milk to create milks for the dogs to smell. (This surprised me; I would have used pasteurized or individual cow culture-negative milk to attempt to minimize other bacteria.) Either the cotton swabs or the 2 ml milk with bacteria concentrated at 10^{12} cfu/ml - a very high bacterial concentration - were placed into a 1 L sterile plastic bucket with a perforated lid. (The large size of container is intriguing. This was not explained.) It was not discussed, but from some of the slides the dogs appeared to select a different toy to play with depending on which bacteria they smelled.

8 of the 10 dogs were trained for between 111 min - 290 min, mean of 163 min training time; 2 dogs could not complete training. The 8 dogs were all trained over 8 training periods, once per week. If the dogs smelled the swab from the culture plate, and were presented with 10 buckets with one positive for *S. aureus* and the other 9 negative, they were highly accurate. If the dogs smelled the 2 ml of milk in the buckets, their performance was much worse, but numbers were not provided.

Then 6 dogs were tested smelling swabs in 10 buckets, one with *S. aureus* and others with *S. uberis* and *Enterococcus* spp. (how many of the other 9 samples had which pathogen, or whether some were negative, was not reported). Then finally the dogs were tested smelling swabs in 10 buckets, one with *S. aureus* and others with *E. coli*, *Strep uberis*, *Strep dysgalactiae*, *Pseudomonas aeruginosa*, *Enterococcus* spp. and/or *Candida albicans*. This time all 9 buckets contained a pathogen. (I think it would be interesting to know what happens when a dog smells a completely culture-negative pasteurized milk sample.) Overall, when detecting *S. aureus* by smelling the swabs, the dogs became 91% sensitive and 97% specific. 4 dogs were 100% correct.

(I think those figures described only the detection of *S. aureus*, not the overall accuracy for all pathogens, but this was

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not clear; there is only limited time for questions after oral presentations.) All of the 6 dogs tested 100 total samples, but the breakdown of how many were each of the three combinations above was not presented.

One dog, presumably thought the best, worked more with the spiked milk samples. He tested 70 milk samples, 10 with *S. aureus* and what if any pathogens were in the other 60 samples was not presented. He became 86% sensitive and 97% specific at identifying *S. aureus* by smelling the milk. It is important to remember that these milks were also concentrated to 10^{12} cfu/ml. Many mastitis pathogens are found in milk between < 100 and 10^4 cfu/ml; most are far below 10^{12} . The authors concluded that “further research is warranted - - with methods such as gas chromatography or electronic [smelling] devices.”

Overall it was an interesting conference, my third time to attend the Buiatrics conference from 1996 to the present. I would recommend the conference to dairy veterinarians.

Please let us know your comments and also suggestions for future topics. I can be reached at (435) 760-3731 (Cell), (435) 797-1899 M-Tues, (435) 797-7120 W-F or David.Wilson@usu.edu.



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