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<http://vetextension.wsu.edu/newsletter/index.htm>

From the Editor – Dehorning calves ...

We do it for the benefits of reduced traumatic injuries to cattle during their lifetime and reduction of muscle bruising in beef. But, we know it is a painful procedure. Research over the last decade has provided us with guidelines to substantially reduce the pain associated with all forms of dehorning. The new *Dairy Calf & Heifer Association Gold Standards* suggests “*Disbudding (preferred) – cautery, less than 1 month of age with local anesthesia.*” Caustic paste appears to be a less painful route to go but still requires pain relief. Dr. Todd Duffield from the Ontario Veterinary College recommends a 4-step process: (1) Develop a dehorning protocol, (2) Use a Lidocaine nerve block, (3) Dehorn at a young age and (4) Consider using an approved NSAID (anti-inflammatory drug for post-operative pain). I would add one more step: *Training and retraining individuals conducting dehorning procedures.* (See Dehorning Resources at the end of this newsletter.)

What we've been up to:

There are a number of us associated with Veterinary Medicine Extension (VME) and Field Disease Investigation Unit (FDIU) and lots of outreach activity in our combined units. What outreach have we been up to recently in Washington? Drs. Moore and Wenz and veterinary student Hoffman have been working on the *Dairy Cattle Lameness* project with help from Dr. Vanegas at Oregon State (in progress). See Our Website at: <http://extension.wsu.edu/vetextension/Lameness/Pages/default.aspx>. Drs. Wenz, Giebel and Moore are completing projects for the *Good Dairy Health Records* project (see Website at: <http://extension.wsu.edu/gdhr/Pages/default.aspx>). Dr. Kasimanickam just submitted a multi-institutional grant proposal to USDA on dairy bull fertility genetic markers and Drs. Wenz, Fox and Moore put in a 5-year Mastitis Extension grant proposal to USDA with CA, ID, and UT. Recently, FDIU conducted field investigations on calf diarrhea and pneumonia outbreaks, bacterial meningitis in sheep, weight loss and mortality in goats, and milk production drop in dairy cows. Drs. Moore and Allen gave presentations at the Country Expo in Stanwood, WA and Dr. Allen gave two presentations at a sheep meeting in Moses Lake. There are many more activities but these are some of the highlights. For more information on FDIU, contact Dr. Wenz <mailto:jrwenz@vetmed.wsu.edu>, or for more information about VME, contact VetExtension@vetmed.wsu.edu.

Reducing Heat Stress in Hutch Calves by Dale A. Moore, DVM, PhD

Looking for a simple way to help hutch calves cope with summer heat stress? In a trial we conducted Summer 2011 in Central Washington, we tested one method to try to improve air circulation within calf hutches to reduce hutch temperatures.

Why look at heat stress remediation? Heat stress affects calf health, growth and welfare. The calf's 'comfort zone' is fairly narrow and temperatures above 90°F with moderate humidity can put calves under stress. Studies looking at different types of housing show that some hutches are better than others at keeping temperatures down by providing shade, but many calves are still challenged with heat stress regardless of the type of hutch. Placing shadecloth over hutches is effective at reducing temperatures just as it does with adult cows. Making sure calves have plenty of fresh water also helps them cope with heat and orienting hutches to the north in summer to maximize shade can also help. What else?

Many dairy advisors have recommended placing a concrete block under the hutch to improve airflow but no one had ever tested this method to see if it did what it was supposed to. We evaluated fifteen calf hutches on one dairy over a 48-hour period. We installed temperature and humidity data loggers in each hutch and placed one outside, providing us with hourly measures. Three times a day we evaluated internal and external hutch carbon dioxide levels (a sign of problems with fresh air circulation), measured airflow and observed calf respiratory rates. For the first 24 hours, the plastic hutches stayed snug to the ground. For the next 24 hours, they were elevated with an 8 X 8 X 16 inch concrete block.

What did we see?

- Calf respiratory rate was higher with higher internal hutch temperature. For every 1°C increase in internal hutch temperature, respiratory rate increased by 2 breaths per minute.
- At the hottest times of the day, internal hutch temperatures were *higher* than outside temperatures when the hutch was on the ground. Internal hutch temperatures were *lower* than outside when the hutch was elevated.
- Elevating the hutch improved air movement within the hutch.
- Hutch elevation lowered afternoon respiratory rates in the calves -- 58 versus 44 breaths per minute.
- Hutch carbon dioxide levels were lower when the hutch was elevated.



Calf respiratory rate can indicate a level of heat stress. In the late afternoon, elevating the hutch lowered the temperature and subsequently, the respiratory rates of the calves. Decreasing carbon dioxide levels within the hutches is important because the concentration of this gas is associated with poor ventilation. The evidence for internal air movement is also an indication of better ventilation from elevating the hutch. Improving ventilation and reducing heat are both important to calf health and welfare. Dairy producers now have another validated choice to remediate summer heat stress in calves.

References

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- Lammers, B.P., vanKoot, J.W., Heinrichs, A.J., and R. E. Graves. 1996. The effect of plywood and polyethylene calf hutches on heat stress. *Appl. Eng. Agric.* 12:741-745.
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- Stott, G.H., Wiersma, F., Menefee, B.E., and F. R. Radwanski. 1975. Influence of environment on passive immunity of calves. *J. Dairy Sci.* 59:1306-1311.

For more information on calf housing, see the WSU Veterinary Medicine Extension Website with calf housing factsheets and on-line presentations at:

<http://extension.wsu.edu/vetextension/calscience/Pages/CalfHousingEnvironment.aspx>

FDA Clarifies use of the Term, “Non-lactating Dairy Cattle”:

February 21, 2012 -- The FDA’s Center for Veterinary Medicine (CVM) has become aware that the term, “*non-lactating dairy cattle*,” may be confusing and that users could mistakenly interpret it to mean that drugs approved for use in non-lactating dairy cattle are safe when used in dry dairy cows, i.e., in cows between two lactations. The term “non-lactating dairy cattle” includes replacement dairy heifers, replacement dairy bulls, and dairy calves, according to current animal industry standards and a long standing FDA practice. These classes of dairy cattle have not yet, or would never produce, milk for human consumption. The term non-lactating dairy cattle does not include dry dairy cows. Dry dairy cows have previously produced milk for human consumption and will again in the future after completion of the “dry period” between lactations. These standards are reflected in CVM’s Guidance for Industry (GFI) #191 (Appendix III, Species and Classes of Major Food Animals).

This is an important human food safety issue because of the potential for residues of drugs labeled for use in non-lactating dairy cattle to be present in milk of the treated cows, as well as in the tissue of the calves born to the treated cows. In order for these drugs to be approved for use in dry dairy cows, residue depletion studies would be necessary to determine whether there are residues in calves born to the treated dry dairy cows and in the milk produced by the treated cows in their subsequent lactation.

FDA is working with sponsors of products approved for use in non-lactating dairy cattle to revise labeling to clarify that dry dairy cows are not non-lactating dairy cattle and therefore should not be treated with drugs labeled for use in non-lactating dairy cattle.

<http://www.fda.gov/AnimalVeterinary/NewsEvents/CVMUpdates/ucm292761.htm>

WSU Recent Research Highlights

(1) Differential virulence of clinical and bovine-biased enterohemorrhagic *Escherichia coli* O157:H7 genotypes in piglet and Dutch belted rabbit models. Shringi S, García A, Lahmers KK, Potter KA, Muthupalani S, Swennes AG, Hovde CJ, Call DR, Fox JG, Besser TE. *Infect Immun.* 2012

Jan;80(1):369-80. Epub 2011 Oct 24. Department of Veterinary Microbiology and Pathology, Washington State University, Pullman, Washington, USA.

(2) Phylogeny of Shiga Toxin-Producing *Escherichia coli* O157 Isolated from Cattle and Clinically Ill Humans. Bono JL, Smith TP, Keen JE, Harhay GP, McDanel TG, Mandrell RE, Jung WK, **Besser TE**, Gerner-Smith P, Bielaszewska M, Karch H, Clawson ML. *Mol Biol Evol.* 2012 Feb 21. [Epub ahead of print] USDA, ARS, USMARC, State Spur 18D, Clay Center, Nebraska, and Department of Veterinary Microbiology and Pathology, Washington State University, Pullman, Washington, USA.

Here's our interpretation of this research: Although we find *E. coli* O157:H7 in cattle and in humans, it appears that not all the strains found in cattle cause human disease and that human disease strains appear to be particularly virulent whereas cattle-biased strains are not. Not all *E. coli* O157:H7 are the same.... For more information on *E. coli* O157, go to our project website: <http://extension.wsu.edu/vetextension/ec/Pages/default.aspx>

What's New at WADDL? **Polytetrafluoroethylene Toxicosis in Chickens**



by **KA Potter, FM Magunda, and R Crespo, WADDL**

A backyard chicken flock in North Idaho suffered a sudden, catastrophic death loss in February of 2012. The flock was free range and consisted of 25 birds, primarily buff Orpingtons with a few Brahma hens and a few pair of guinea fowl. Although free range, most of the flock was locked into a raised, well-insulated coop at night. One morning, all fowl in the coop were dead, while those who remained outside were alive. All dead fowl were found in normal postures with no signs of disturbance. Relevant history included addition of a new heat lamp bulb into the coop the previous day. One dead bird was examined by the referring veterinarian, who found no evidence of predator attack. Six dead birds were submitted to the Washington Animal Disease Diagnostic Laboratory for analysis.

All birds were in good body condition and had no external or internal evidence of trauma. The lungs of all birds were dark red and sections of the lungs sank in formalin (when they should be floating). No other significant gross lesions were noted. Pooled cloacal and tracheal swabs were negative for Avian Influenza virus by PCR. Histopathology showed that all the lungs had moderate to severe congestion, hemorrhage and edema but no significant inflammation. Teflon toxicosis was suspected because of the history and lesions and a literature review indicated that domestic chickens are susceptible. Exposure to other toxic gases, including carbon monoxide and ammonia, were ruled out based on history.

Polytetrafluoroethylene (PTFE) is the main ingredient in Teflon, which is known to be toxic to pet birds when the product is overheated. The PTFE is also used in shatter resistant coatings on light bulbs, including some infrared bulbs used at heat lamps for poultry. When heated to temperatures above 280C, PTFE coated objects, whether non-stick cook ware or light bulbs, will emit a variety of toxic

fumes. Humans can have mild symptoms of toxicity (described as 'flu-like symptoms') but birds, due to their small size and efficient respiratory system, are highly susceptible and die, often with no warning signs.

Based upon these findings, we recommend that PTFE coated infrared bulbs **not** be used in poultry facilities. Unfortunately, it is not easy to determine if PTFE is a component of any particular bulb. In general, bulbs labeled as 'shatter resistant' likely have PTFE in the coating and should not be used in poultry houses. Find vendors who indicate that their bulbs are approved for avian safety.

References

Boucher M, Ehmler TJ and Burmudez AJ: Polytetrafluoroethylene gas intoxication in broiler chickens. *Avian Dis* 44:449-453, 2000.

Shuster KA, Brock KL, Dykso R, et al.: Polytetrafluoroethylene toxicosis in recently hatched chickens (*Gallus domesticus*). *Compar Med* 62:49-52, 2012.

Wells RE, Slocombe RF: Acute toxicosis of budgerigars (*Melopsittacus undulatus*) caused by pyrolysis products from heated polytetrafluoroethylene: clinical study. *Am J Vet Res* 43:1238-1242, 1982.

For more information about the Diagnostic lab: http://www.vetmed.wsu.edu/depts_waddl/

Hypomagnesemic Tetany, Grass Tetany, Grass Staggers: It's That Time of the Year by Andrew J. Allen, FDIU

Its spring, things are turning green, grass is growing or at least it should be. It's time to turn your cattle, sheep and goats out to pasture. However, there is a danger out there awaiting your animals. It just happens to be that lush green grass those ruminants want so badly or at least a mineral that the lush green grass is often deficient in, **Magnesium (Mg)**. When ruminants eat grass deficient in Mg they can develop a condition called *Hypomagnesemic tetany* (*Grass tetany* or *Grass staggers* are other names given to this condition). This is a disorder of Mg metabolism in ruminants that causes signs of hyperexcitability, grinding of teeth, salivation, uncoordinated gait, abnormal sensitivity to sounds, erect ears, muscle and skin twitching, recumbency, seizures, and death. Often no signs will be observed, you may just find your animal dead.



Which animals does this disease usually affect? The most common animals to be affected by this condition are lactating females more specifically older cows, does, and ewes in early lactation. Males, heifers, doelings and ewe lambs are less likely to be affected.

When does this condition occur? The condition usually occurs during the spring when grass pastures are growing quickly. However, it can occur during the fall after significant rains or during rapid growth with irrigation.

Are all pastures deficient in Magnesium in the spring? Most types of cool season grasses can be deficient in Magnesium in the spring when they are growing rapidly. Small grains such as wheat, oats, barley, and triticale can also be deficient in Mg when grazed. Mixed legume/cool season grass

pastures are less likely to cause Hypomagnesemia in ruminants. Pastures with high potassium content in the soils and grass are more likely to cause this condition as well. Excessive fertilization with potassium and nitrogen fertilizers can increase the risk of grass tetany.

How does this condition occur? Ruminants excrete Mg in their milk and urine every day. If their feed is deficient in Mg they will not be able to replenish the Mg lost from milk production and they will deplete their available stores quite quickly. High concentrations of Potassium in feeds will decrease the amount of Mg that is absorbed in the rumen adding to the depletion. Low sodium concentrations in feeds can also decrease Mg absorption. Sodium levels are typically low in lush fast growing cool season grasses.

What factors increase the risk of Hypomagnesemic tetany? Not all animals that have low blood levels of Mg will show signs of tetany. Often stressful handling of animals during times of hypomagnesemia will cause animals to show signs. Stressful handling can involve such things as gathering animals, processing, vaccinating, trailering and pretty much any manipulation that the animal is not accustomed to.

How do you treat Hypomagnesemia? Immediate treatment of hypomagnesemic animals is critical. Once animals start showing signs they can die very quickly, often within hours. Intravenous Mg and Ca should be administered by a veterinarian. If this is not possible an owner can administer a drench (oral solution) of 200 to 400 ml of 50% Mg sulfate (Epsom salts) water solution to adult cattle or 25 to 50 mls to does and ewes. It is also possible to administer Mg as an enema. It is important to work quietly and gently with animals with this condition and to not try to get the animal up for at least 30 minutes after treatment to avoid causing more convulsions or seizures. Reoccurrence is common if the diet is not changed.

How do I prevent Hypomagnesemia? To prevent Hypomagnesemia animals should be provided a high Mg supplement or free choice mineral mix containing 8 to 12% Mg during times of the year that Mg levels are low in their pastures. It is also possible to apply Mg fertilizers or Mg oxide dust to pastures to increase Mg levels.

WSDA Corner by Dr. Leonard Eldridge, State Veterinarian



New Animal Health Program Manager

The Animal Services Division is pleased to announce and welcome Virginia “Ginny” Prest as the new Animal Health Program Manager. Ginny started with WSDA as the Eastern Washington Inspector for the Dairy Nutrient Management Program in 2004. In 2006, she moved into the lead inspector position. Prior to joining WSDA, Ginny worked at Washington State University – Prosser Research Unit, conducting research, education, and demonstration trials in water quality, nutrient management, and crop production. Ginny will be working with the veterinarian staff, animal disease traceability staff and livestock identification staff to strengthen and protect animal health in emergency response, disease investigations, traceability, and animal disease prevention. We are very excited to have Ginny join our team and look forward to the same common sense approach to the Animal Health Program as she exhibited in the Dairy Nutrient Management Program.

BSE Import Regulations

In March, USDA announced a proposal to update import regulations so that U.S. entry requirements were tied to existing international standards for the trade of beef. The new USDA rule would adopt the international animal health risk assessments for animals or products that could harbor bovine spongiform encephalopathy (BSE). If the rule is adopted, the United States will implement the policy that USDA has been asking all our trading partners to adopt for many years: base their trade decisions on the actual risk of BSE. While the rule may result in beef imports from several new markets, USDA believes this change will improve the U.S. negotiating position as we seek to reopen several lucrative markets still hostile to our beef.

As state veterinarian, I would caution against any policy that increases the risk of importing BSE or other cattle diseases into Washington. I asked USDA's chief veterinarian, Dr. John Clifford, if this new

rule would change any border crossing requirements, including the use of sealed trucks and individual identification with the CAN brand. I was assured that all current import requirements will remain in place. The proposal does not alter the ruminant feed ban, suspend current BSE surveillance efforts or relax the restriction on specified risk materials entering the food supply. Also, WSDA will maintain existing state requirements for TB and Brucellosis testing for all cattle entering Washington.

Trichomoniasis

I wanted to provide an update on Trichomonas fetus (trich) in cattle in Okanogan County. Over the last two years WSDA, Washington State University Extension, Washington Animal Disease Diagnostic Laboratory, and local veterinarians have provided the facts and education surrounding the devastating consequences of trich. Information has also been provided on how to eliminate the disease to the cattle community.

After meeting with representatives of the cattle industry and community in Okanogan County a few weeks ago, we looked at the large number of open cows as a result of infection and all determined that there needs to be a structured program that all cattle owners could follow in an effort to eliminate trich. WSDA veterinarians and investigators are working with all members of the cattle community in Okanogan County to ensure testing is occurring with all exposed bulls. Further recommended preventative measures should include eliminating all late and open cows, keeping a young bull battery, and making sure all cows turned out on public lands have a live calf at side, or have a medical reason for not having a calf at side that is not related to possible trich infection. All heifers turned out on public lands must be under 24 months of age and only have first year exposure to a virgin or test negative bull.

My office has the authority to prevent exposure to disease and with the knowledge that infected bulls will never clear and always be carriers of infection, the best way is to test all exposed bulls and remove the positive ones. WSDA can only recommend the type of cows that are turned out on public lands however, this is important because, although most cows will clear over time, their removal will prevent a source of infection from the small number of carrier cows that remain infected. I think this issue has pointed out gaps in our regulations and we need to look at strengthening our laws and rules to protect all cattle owners from disease exposure in the future; yet not be so rigorous that they restrict commerce and freedom to conduct business. I look forward to working with the cattle industry on just how and where we go forward on any proposed changes.

Calf Dehorning Resources

Poster in English and Spanish on dehorning using caustic paste:

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20420/pnw626.pdf>

Summary and Demonstrations of different dehorning techniques

<http://www.dehorning.com/dehorning-methods/>

Continuing Education

Veterinarians

Academy of Dairy Veterinary Consultants Spring Meeting April 13-14, 2012. Dr. Jose Santos, Nutrition and Reproduction Specialist, University of Florida, will be the featured speaker. Location – Petaluma, California. Contact Dr. Dale Moore for more information. <mailto:damoore@vetmed.wsu.edu>

E coli O157:H7 Preharvest Controls Conference October 4, 2012, Greenbelt Marriott, Greenbelt, Maryland
<http://extension.wsu.edu/vetextension/ecoliconference/Pages/default.aspx>

Producers

Riparian Grazing/Water Quality Workshop May 21-22 in Mt Vernon, WA & May 24-25 in White Salmon, WA.
For more information contact Tip Hudson at: 509-962-7507 or e-mail: HUDSONT@WSU.EDU

Washington State Shearing School April 7 (Advanced Tune-Up), or April 9-13 (Basic Beginner School),
Moses Lake, WA. For more information contact Sarah Smith at 509-754-2011, ext 413, or e-mail:
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Send newsletter comments to the Editor:

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