

ag animal health VETERINARY MEDICINE EXTENSION *Fall 2012*

WASHINGTON STATE UNIVERSITY EXTENSION & WSU COLLEGE OF VETERINARY MEDICINE

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From the Editor – Ferdinand’s Ice Cream is Number 1! For National Dairy Month in June, I entered our own WSU creamery’s Huckleberry Ice Cream into a Flavor Face-Off. Because of many of you, we won the national face-off because of all the votes we got. What this has reminded me is that it really takes a team of very different people (and other animals) to lead to something like this. Just think of the cows at Knott’s Dairy who made the milk, the animal science students and staff that fed and milked and cleaned up after them, the veterinary students and faculty that provided veterinary care, the truck drivers, the creamery staff and students to make the ice cream, and last, but not least, the consuming public (me). And, if you think about it, for every livestock operation and ag animal product, there is a team at work that cares for, manages, moves, and creates some of our most favorite things....

What we (VetMedExtension & FDIU) have been up to:

Vet Med Extension celebrates its 5th birthday! Dr. Kasimanickam published a review article on intrauterine fetal growth restriction – an important topic for both ag animals and humans (*Clinical Theriogenology* 2012 Vol. 4 No. 2 pp. 133-148) and Dr. Allen just published a paper on Johnes disease immunology (*Veterinary Immunology and Immunopathology* 2012 Jul 27. [Epub ahead of print]). FDIU completed several investigations including a pheasant health problem, horse eye problems and cattle growth and reproduction problems. At this July’s American Dairy Science Association annual meeting in Phoenix, Drs. Giebel, Wenz and Moore had four posters and two oral presentations. Drs. Moore and Wenz will be presenting at the AABP and WSVMA meetings this month and Drs. Moore and Allen will head to Boise next month to speak at the American Dairy Goat Association annual conference. *Vet Med Extension* is working with Dr. Tom Spencer and others from Animal Sciences and Dr. Joe Dalton from the University of Idaho on a newly-funded project on dairy cattle genetics’ influence on reproductive performance. Extension will begin with a needs assessment of dairy producers. For more information on FDIU, contact Dr. Wenz jrwenz@vetmed.wsu.edu, or for more information about VME, contact VetExtension@vetmed.wsu.edu.

H3N2 Influenza: The mix of people and pigs

By Dale A. Moore, DVM, PhD



By mid-August (2012) about 240 people from ten different states were confirmed with H3N2v influenza virus (since August 2011). The highest case counts were in Indiana and Ohio. The Centers for Disease Control and Prevention (CDC) linked many of the cases to people and pig interactions at fairs or livestock exhibitions and some limited human-to-human transmission.

Because flu viruses in pigs do not normally infect people, what is going on here? The virus in question is considered a 'variant' and appears to contain a gene (the matrix gene) from the 2009 H1N1 flu virus that did infect people. The CDC believes this may make the virus more 'transmissible' to people. The severity of infection with this virus is similar to what is seen with seasonal flu. Most of the cases are seen in children and there is some evidence to suggest some adults may already have some pre-existing immunity to the virus.

Influenza in Pigs – The USDA has been testing pigs for influenza viruses through a voluntary surveillance program (<http://www.aasv.org/public/FluSurveillanceEducationOutreachFinal.pdf>). This program cannot tell us how much of the virus is really out there, but it can tell us what viruses are circulating in the swine population. From the USDA: *"USDA's SIV Surveillance Program has tested 12,662 samples from 3,766 swine diagnostic lab submissions collected from October 1, 2010 through July 31, 2012. Over that time period, 1,488...have been identified as positive for Influenza A infection. Overall, 73 H3N2 positive submissions were detected in FY2011 (October 1, 2010 to September 30, 2011) and 138 in FY2012 from October 1, 2011 to July 31, 2012. 57 Of the 138 H3N2 cases identified in FY2012 and tested to date contain the pandemic M gene and were classified as H3N2pM."*

When pigs become infected, they may show signs of respiratory disease such as fever, coughing, runny eyes or nose, sneezing, or breathing difficulty. Or – they may be infected and have a very mild case with little to no symptoms. The virus is spread through close contact or secretion-contaminated objects. Vaccines are available for pig influenza viruses such as H1N1, H1N2 and H3N2. However, control through vaccination alone is challenging because of virus evolution.

Pigs at Fairs and Livestock Exhibitions – What should we do? We are in the middle of fair season and the pig is a very popular 4H project animal. We (in Washington) are blessed that we have not seen a case of this disease in people yet. But, fair managers, fair veterinarians, exhibitors and fairgoers should still take normal precautions with children. Hand washing is the primary means of reducing exposure and a "no-touch" policy could be used by parents concerned about their children. Hand washing is still key and will reduce people's exposure to many potential diseases.

The livestock exhibition remains one of the most popular attractions at the fair but is not without risks. The good news is that there are many resources for understanding the influenza outbreak and for things to do to prevent disease transmission. For one-stop shopping on disease information and signs and educational posters, see the CDC website at: <http://www.cdc.gov/flu/swineflu/h3n2v-outbreak.htm>.

What do you do if you think you have a dairy herd lameness problem? By Dale A. Moore

If you have had your herd scored for locomotion and the herd lameness prevalence was above your goals, what can you do? Recent research from Cornell University provided estimates of the costs of cases of lameness. For each case, the cost is between \$120 to over \$200 per case, depending upon the cause (Cha et al., 2010). If your herd prevalence is 20%, for example, and you have 2500 milking cows, that could equate to about \$75,000 lost due to less milk and poorer reproduction in those cows.



Dairy producers and veterinarians have some new tools to help track down the things that can contribute to lameness and remediate those causes. The first step is to find out the most common conditions. Because most dairy cattle lameness is in their feet, and in particular, their hind feet, the first place to look is at the hooves during trimming. Are most of the conditions seen hairy warts (digital dermatitis) or are you seeing more signs of laminitis? If most of the lesions are infectious, (hairy warts or footrot) the footbath routine and the cows' environment need to be evaluated. If most lesions are compatible with laminitis, the environment and the feed and feeding system should be evaluated.

Some conditions have simpler solutions, such as more aggressive treatment for digital dermatitis. Other conditions have multiple causes and may require changes in the stalls or changes in the feeding routines. The more thorough the investigation into the possible inciting causes, the more likely the solutions will work. For example, in the case of laminitis, maybe just changing the diet won't solve all the problems; maybe cow comfort is contributing significantly to the condition of the feet because cows are not using the stalls.

Because the investigation part of the equation is critical, WSU Veterinary Medicine Extension has pulled the literature together and developed a simple but comprehensive approach to identifying causes of and risks for lameness. For details on investigating lameness and the rationale behind it, see <http://extension.wsu.edu/vetextension/Lameness/Pages/Toolbox.aspx>.

References

Cha E., J. A. Hertl, D. Bar, and Y. T. Gröhn. 2010. The cost of different types of lameness in dairy cows calculated by dynamic programming. *Prev. Vet. Med.* 97(1):1-8.

WSU Recent Research Highlights

Association of serum pro- and anti-inflammatory cytokines and metabolic mediators in uterine disease in postpartum dairy cows. R. Kasimanickam^{1*}, V. Kasimanickam¹, J. Olsen^{1‡}, E. Jeffress^{2‡}, D. Moore¹. ¹Dept. Veterinary Clinical Sciences, Washington State University, Pullman, WA 99164, ²Center for Veterinary and Health Sciences, Oklahoma State University, Stillwater, OK 74078

The objectives of the study were to evaluate the concentrations of serum adipokines (adiponectin, leptin, tumor necrosis factor (TNF)- α , interleukin (IL)-1 β and IL-6) in postpartum uterine inflammatory conditions (metritis, clinical endometritis and subclinical endometritis) and body condition loss, and to assess the relationship of adipokines and body condition loss in establishment of persistent uterine inflammatory conditions in dairy cows. All parity lactating Holstein cows (N=40), with body condition score from 2 to 4 (8 cows for each 0.5 score increments) were enrolled. Body condition was monitored for all cows weekly for 7 wks post calving. Cows with uterine inflammatory conditions were diagnosed and reevaluated 2 wks later. Blood samples were collected from 1 wk prior to calving to 7 wks after calving for the determination of serum concentrations of adipokines, insulin and insulin like growth factor (IGF)-1. Cows with metritis or clinical endometritis had higher serum adiponectin, leptin, TNF- α , and IL-6 serum concentrations compared to normal cows ($P<0.05$). Serum leptin, TNF- α , IL-1 β and IL-6 were higher in cows with subclinical endometritis compared to normal cows ($P<0.05$). Insulin and IGF-1 were at lower concentrations in metritis and clinical endometritis cows. Cows with low BCS had significantly higher adiponectin and lower leptin, insulin and IGF-1 concentrations than cows with high BCS ($P<0.05$). Cows with persistent uterine inflammatory condition had higher adipokines and lower TNF- α , IL-6, leptin, insulin and IGF-1 compared to normal and spontaneously recovered cows ($P<0.05$). In conclusion, circulating adipokines, insulin, IGF-1 concentrations are in association with BCS (low vs high) categories and postpartum uterine inflammatory conditions. ***It is plausible that body condition loss-mediated alterations in anti- and pro-inflammatory cytokines and altered cytokines-mediated body condition loss act serially to prolong the persistence of uterine inflammation in dairy cows.***

‡DVM Class of 2013.

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What's New at WADDL?

Economical Pooled Testing for Bovine Trichomoniasis Now Available at WSU-WADDL



WSU-WADDL has been working recently with Dr. Leonard Eldridge, WA State Veterinarian, and the WSDA to develop and implement more economical testing for bovine trichomoniasis. WSDA has had trichomoniasis import regulations since 2008, through WAC 16.54.086.

The official test for bovine trichomoniasis in WA state is the polymerase chain reaction (PCR) test, which detects *Trichomonas foetus* DNA from infected bull smegma samples (preputial scrapings) with high sensitivity. In order to take advantage of the high sensitivity of the PCR test method, WADDL implemented and validated a variation of the *Trichomonas foetus* PCR test in which preputial smegma samples from up to 5 bulls are pooled **in the laboratory** in order to make testing that meets the requirements of WAC 16.54.086 more economical for cattle producers.

For example, the cost to test 5 bulls using the individual PCR test (5 separate PCR tests on 5 bull samples) is \$125 (\$25 per PCR test) while the cost to test 5 bulls using pooled testing (pooling individual samples then doing a single PCR test) is \$45. That is a cost savings of over 60% if a pooled PCR test is negative.

However, there are some caveats to pooled testing and it should not be used in all situations.

- Not all states accept Trichomonas pooled PCR testing for incoming bulls so you need to check with the importing state before requesting the pooled testing from WADDL.
- There is a some loss of test sensitivity with pooled PCR testing compared to individual PCR testing so pooled testing should not be used in all clinical situations, especially with known infected herds. If you are trying to identify and cull the last bull in an infected herd, individual PCR is the method of choice.
- Pooling samples from bulls from different sources and unknown herd status (e.g. at livestock markets) should not be done.
- The economic advantage of pooled testing is negated with a positive pool test, which requires testing each individual sample in the pool using the individual PCR test in order to determine which sample(s) in the pool is (are) positive. For example, a positive pool of 5 bulls (\$45) plus testing of each individual in the pool (5 X \$25 = \$125) is more expensive than just testing individual bulls in the first place. This is another reason pooled tested is not recommended from known positive herds.
- ALL POOLING OF SAMPLES IS DONE IN THE LABORATORY – NOT BY THE BULL OWNERS OR VETERINARIAN. This is to ensure the ability to check individual samples if there is a positive pool.

Dr. Eldridge and WSDA have some written guidelines for bovine trichomoniasis pooled PCR testing:

WSDA has had Trichomoniasis regulations since 2008. Testing protocol advancements since the implementation of the regulations has allowed WSDA to revisit the issue of pooling with low risk situations or for non-regulatory purposes. This action still complies with the Trichomoniasis import regulations for import in WAC 16.54.086. The criteria where pooling of up to 5 bulls will be allowed are:

- 1) Bulls that are over a year old and therefore cannot be designated as virgin bulls, but have had no breeding contact with females.
 - a. Bulls in this class that originate from a herd with no history of Trichomoniasis infection and are offered at a production sale in a herd with no history of infection. This is only allowed for a single herd, not assembled cattle. (Herd will be defined as cattle together for a minimum of 120 days)
 - b. Bulls in this class that may be segregated at a bull test station that are brought to the facility under a year of age and now are to be used for natural service and are over a year old but have had no breeding contact with females.
- 2) Bulls sampled for a herd diagnostic test without regulatory implications.
- 3) As part of a disease investigation, pooling may be allowed if the herd does not have a history of infection or in the judgment of the herd veterinarian Trichomoniasis infection is unlikely.

Pooling will not be allowed for:

- 1) Multiple owners for a single pool. This effectively eliminates pooling as an option at livestock markets.
- 2) Infected herds or herds with a history of infection within the past 12 months
- 3) SOME STATES WILL NOT ACCEPT POOLED SAMPLES FOR IMPORTATION TESTING INTO THEIR STATE. CHECK THE STATE OF DESTINATION REQUIREMENTS BEFORE REQUESTING POOLED SAMPLES.

For more detailed information about bovine trichomoniasis testing at WADDL please visit our website at http://www.vetmed.wsu.edu/depts_waddl/. Click on “Trichomoniasis pooled testing” in the Current Announcements box for detailed information about bovine trichomoniasis sampling and testing. There also is a special Trichomonas pool PCR accession form that can be downloaded by clicking on “Laboratory Accession Forms”. Finally, you can also review the WADDL testing fees by clicking on the “Fee Schedule”. Most importantly please feel free to phone WADDL at 509-335-9696 if you have questions about bovine trichomoniasis testing options. *Dr. Tim Baszler, Director, WADDL*

WSU-WADDL Hosts Foreign Animal Disease Training

The Washington State University, College of Veterinary Medicine and Washington Animal Disease Diagnostic Laboratory hosted the Northwest Foreign Animal Disease Response Refresher course in Pullman, WA on July 18-19, 2012. The USDA Animal Health and Plant Inspection Service (APHIS), Veterinary Services division organized the training course. As the title implies, the purpose of the course was a refresher training in field personnel response to a foreign animal disease infection event, such as a Foot and Mouth Disease Outbreak.

Dr. John Bare, USDA-Veterinary Services moderated the event, which was attended by over 40 state and federal veterinary regulatory personnel from Washington, Idaho, Oregon, Montana, and Wyoming. The training focused on the practical aspects of initiating and conducting a foreign animal disease investigation and was very well received by the participants. The meeting agenda along with presenters are listed below:



Northwest Foreign Animal Disease Response

- Emergency Management Updates and Direction;
 - Dr. John Zack, Director, Preparedness and Incident Coordination, USDA, APHIS, VS EMD, Riverdale, MD
- The Role of the National Animal Health Laboratory Network in Foreign Animal Disease Preparedness
 - Dr. Tim Baszler, Director, WSU-Washington Animal Disease Diagnostic Laboratory (Core NAHLN Laboratory), Pullman, WA
- Sample Collection
 - Dr. Fernando Torres-Vélez, Director, Foreign Animal Disease Diagnostic Laboratory, USDA, APHIS, VS, NVSL, FADDL, Greenport, NY
- Vesicular Stomatitis Virus
 - Dr. Eileen Ostlund, Head, Equine and Ovine Viruses Section, USDA, APHIS, VS, NVSL, DVL, Ames, IA
- Coordinated Response
 - Dr. Burke Healey, Area Regional Director, USDA, APHIS, VS, Fort Collins, CO
- Have You Thought About an FAD in Your Area?
 - Dr. Rolf Westly, Veterinary Medical Officer, USDA, APHIS, VS, Spokane, WA
- Forming an Incident Command Post in Your Area
 - Dr. Don Otto, Veterinary Medical Officer, USDA, APHIS, VS, Knoxville, IA
- ESF 11 – Role During an Outbreak
 - Dr. John Grendon, ESF 11 Coordinator, USDA, APHIS, PPQ, Olympia, WA
- Paperwork and EMERS Update
 - Dr. Don Otto, Veterinary Medical Officer, USDA, APHIS, VS, Knoxville, IA
- Descriptive Pathology
 - Dr. Fernando Torres-Vélez, Director, Foreign Animal Disease Diagnostic Laboratory, USDA, APHIS, VS, NVSL, FADDL, Greenport, NY

- Aquatic FAD Response
 - Dr. Larry Rawson, Veterinary Medical Officer, USDA, APHIS, VS, Kailua, HI
- Schmallenburg Virus
 - Dr. Eileen Ostlund, Head, Equine and Ovine Viruses Section, USDA, APHIS, VS, NVSL, DVL, Ames, IA



WSDA Corner

By Dr. Leonard Eldridge, State Veterinarian

VESICULAR STOMATITIS DETECTED IN NEW MEXICO

On April 30, 2012, the National Veterinary Services Laboratories (NVSL) in Ames, Iowa, confirmed a finding of New Jersey serotype vesicular stomatitis virus (VSV) infection on equine premises in Otero County, New Mexico in two horses. The two horses displayed clinical signs and had positive VSV serology. New Mexico currently has 18 positive premises under quarantine, four counties with positive premises and 26 positive equine species. *[Ed. Note: The disease was confirmed in Colorado on one premise in August 2012. New Mexico now has 20 confirmed positive premises. Although most of the 236 cases have been in horses, at least 6 goats were positive.]*

Vesicular stomatitis is a viral disease that primarily affects horses and cattle and occasionally swine, sheep, goats, llamas, and alpacas. Humans can also become infected with the disease when handling affected animals, but this is a rare event. Vesicular stomatitis has been confirmed only in the Western Hemisphere. It is known to be an endemic disease in the warmer regions of North, Central, and South America, but outbreaks of the disease in other temperate geographic parts of the hemisphere occur sporadically. In the past decade, the Southwestern and Western United States have experienced a number of vesicular stomatitis outbreaks. Outbreaks usually occur during the warmer months, often along waterways. In some years, only a few premises in a single state have been affected. However, in other years, multiple states and many premises have been involved. Since there could be a vesicular stomatitis outbreak in any given year, it is essential that veterinarians and livestock owners be on the alert for animals displaying clinical signs of the disease. For current information on vesicular stomatitis outbreaks or summaries of the most recent past outbreaks, please visit the APHIS Web site at www.aphis.usda.gov/vs/nahss/equine/vsv/.

Economic Impacts -- While vesicular stomatitis does not generally cause animals to die, it can still cause economic losses to livestock producers. The disease is particularly significant because its outward signs are similar to (although generally less severe than) those of foot-and-mouth disease, a foreign animal disease of cloven-hoofed animals that was eradicated from the United States in 1929. The clinical signs of vesicular stomatitis are also similar to those of swine vesicular disease, another foreign animal disease. The only way to tell these diseases apart is through laboratory tests. Vesicular stomatitis is recognized internationally as a reportable disease. This means that there are serious economic and regulatory repercussions associated with the diagnosis. When the disease is detected in the United States, some countries may take action to block international trade of U.S. animals and animal products. Interstate movement of animals is also impacted. Premises containing affected animals are quarantined until 21 days after the lesions in the last affected animals have healed.

Clinical Signs -- In affected livestock, the incubation period for vesicular stomatitis ranges from 2 to 8 days. Often, excessive salivation is the first sign of the disease. Close examination of the mouth initially reveals blanched and raised vesicles or blister-like lesions on the inner surfaces of the lips, gums, tongue, and/or dental pad. In addition, these blister-like lesions can form on the lips, nostrils, coronary band, prepuce, vulva, and teats. The blisters swell and break, which causes oral pain and discomfort and reluctance to eat or drink. Lameness and severe weight loss may follow. Body temperature may rise immediately before or at the same time lesions first appear. Dairy cattle often

suffer from teat lesions and subsequent mastitis; a severe drop in milk production commonly occurs. Some affected dairy cattle can appear to be normal with no clearly visible signs of illness but may only eat about half of their normal feed intake. If there are no complications such as secondary infection, affected animals typically recover in about 2 weeks.

In horses, vesicular lesions generally occur on the upper surface of the tongue, the lips, around nostrils, corners of the mouth, and gums. Lesions in horses may also be expressed as crusting scabs on the muzzle, lips, or ventral abdomen. Affected pigs usually first show signs of lameness caused by foot lesions.



Disease Spread -- How vesicular stomatitis spreads is not fully known; insect vectors, mechanical transmission, and movement of animals are all factors. Once the disease is introduced into a herd, it may move from animal to animal by contact or exposure to saliva or fluid from ruptured vesicles. Humans rarely contract vesicular stomatitis, but they can become infected. In people, the disease causes an acute influenza-like illness with symptoms such as fever, muscle aches, headache, and malaise. To avoid exposure to this disease, individuals should use personal protective measures when handling affected animals.

Recommended Actions -- There is no specific treatment or cure for vesicular stomatitis. Good sanitation and quarantine practices on affected farms usually contain the infection. When a definite diagnosis is made on a farm, the following procedures are recommended:

- Separate animals with lesions from healthy animals, preferably by stabling. Animals on pastures tend to be affected more frequently with this disease.
- As a precautionary measure, do not move animals from premises affected by vesicular stomatitis until at least 21 days after lesions in the last affected animal have healed.
- Implement on-farm insect control programs that include the elimination or reduction of insect breeding areas and the use of insecticide sprays or insecticide-treated ear tags on animals.
- Use personal protective measures when handling affected animals to avoid human exposure to this disease.

Report Suspicious Cases -- Veterinarians and livestock owners who suspect an animal may have vesicular stomatitis or any other vesicular disease should immediately contact State or Federal animal health authorities. Diagnosis of the disease cannot be made based on clinical signs but requires testing of samples at a facility approved by the U.S. Department of Agriculture's National Veterinary Services Laboratories in Ames, IA. A diagnosis can be based on antibody tests using serum samples from the animal and/or by detecting virus from swabs of lesions, blister fluid, and tissue (flaps, biopsies). A diagnosis can generally be made in a week or less.

Continuing Education

Veterinarians

Washington Farm Animal Welfare Symposium September 15, 2012. CUE 203, Washington State University, Pullman, WA. For information and registration: <http://cm.wsu.edu/ehome/index.php?eventid=44046&>

Washington State Veterinary Medical Association Annual Conference September 28-30, 2012. Yakima, WA. <http://www.wsvma.org/displaycommon.cfm?an=21>

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

Academy of Dairy Veterinary Consultants Fall 2012 Meeting. October 19-20, 2012, Comfort Inn, Half Moon Bay, CA. <http://www.vetmed.wsu.edu/orgADVCL/>

Producers

Washington Farm Animal Welfare Symposium September 15, 2012. CUE 203, Washington State University, Pullman, WA. For information and registration: <http://cm.wsu.edu/ehome/index.php?eventid=44046&>

American Dairy Goat Association Annual Convention October 13–20, 2012. Boise, Idaho. <http://www.adga.org/>

Send newsletter comments to the Editor:

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