

Diagnostic Center News

Fall 2012

University of Nebraska
Veterinary Diagnostic
Center

Co-Editors: Dr. Alan R.
Doster & Mavis Seelmeyer

Notes From the Diagnostic Center

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Welcome to Dr. Loy



The Diagnostic Center would like to welcome Dr. J. Dustin Loy to the VDC Faculty. Dr. Loy serves as the faculty supervisor for the Microbiology Laboratory. Dr. Loy comes from Iowa State University where he completed his DVM degree in 2009 and his PhD degree in 2011. Dr. Loy will focus on development and implementation of molecular tests and assisting clients with infectious disease cases submitted to the Veterinary Diagnostic Center. Dr. Loy is also a co-instructor for Bios/VBMS 441/841 Pathogenic Microbiology for the School of Veterinary Medicine and Biomedical Sciences.

Holiday Closings for the Diagnostic Center are as follows:

Thanksgiving: Closed on Thurs., Nov. 22 and on Fri., Nov. 23

Christmas: Closed from noon to 5 p.m. on Mon., Dec. 24
and all day on Tues., Dec. 25 and Wed. Dec., 26

New Years: Closed from noon to 5 p.m. on Mon., Dec. 31 and
all day on Tues., Jan. 1



Enjoy your holidays and please plan your shipments accordingly. Thank you!



Did You Know??

A cat cannot see directly under its nose. This is why the cat cannot seem to find tidbits on the floor.

PLEASE NOTE: The Diagnostic Center is now able to accept payments with either Visa or MasterCard. Please call the main office at 402-472-1434 for further information.

Clinical Pathology and Courier Services Now Available

The Nebraska Veterinary Diagnostic Center (VDC) is pleased to announce a joint collaboration with Nebraska LabLinc (NLL) to provide you with both clinical pathology testing and courier service. NLL is a locally owned clinical pathology laboratory in Lincoln, NE which is focused on customer service and use of the most recent technology for clinical testing procedures. NLL performs a variety of companion and food animal clinical chemistries, hematological and coagulation tests; can determine specific circulating drug levels; and is capable of determining certain hormone levels for a variety of animal species. All other testing including histopathology, bacteriology, and virology are referred to the VDC.

Diagnostic testing provided by the VDC complements clinical chemistry and hematological assays performed by NLL. The VDC employs a faculty that is well versed in diagnostic veterinary medicine of small, large and exotic animals. The VDC has three pathologists certified by the American College of Veterinary Pathologists and faculty members with extensive post-DVM training and diagnostic laboratory experience in bacteriology, parasitology, pathology, toxicology, and virology. The VDC provides case consultation by experienced veterinary diagnosticians who are recognized as leaders in their fields and are ready to answer your questions regarding case submissions.

NLL is offering clients two options. The first option is for your office to send clinical pathology testing to NLL and receive the courier service including delivery of samples to the VDC at no charge. The second option is to only use the courier service for delivery of samples to the Veterinary Diagnostic Center at a cost of \$15 per pick-up.

The benefits of sending your clinical pathology testing to NLL is faster turn-around-time, competitive pricing, and working with a customer focused laboratory that is proficient and knowledgeable about handling animal samples. Testing is performed by medical laboratory technologists who are certified by the American Society of Clinical Pathologists (ASCP). Results are reviewed by a knowledgeable professional staff. All testing is performed under strict QA/QC assurance guidelines dictated by the ASCP.

The benefits of using NLL's courier services are convenience, providing timely results, and allowing for better sample integrity. If you are interested in additional information or setting up an account with NLL to utilize these services please contact:

Sharon Pfeiffer

402-465-1997

Sharon.Pfeiffer@lablinc.com

Amy Thomas

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Epizootic Hemorrhagic Disease

Epizootic hemorrhagic disease is caused by an orbivirus spread by a biting midge. It is endemic in deer, particularly white-tailed deer. Although this is not a unique disease in cattle, there was an increased incidence in deer and cattle this past year due to persistent high temperatures, dry conditions and concentration of deer around limited water holes. Killing frosts decrease the incidence sharply. This high level of disease is not expected to continue as the vector is killed by freezing temperatures.

Affected cattle recover from symptoms within a few weeks. At its worst, morbidity can approach approximately 5%. Few deaths are experienced. The most concerning part of the lesions is that they are similar to Foot and Mouth Disease and Vesicular Stomatitis. Ulceration of the mouth and nares can lead to anorexia and dehydration. Other signs include fever, lameness, ocular and nasal discharge, ocular swelling, ptialism, and dyspnea.

As these clinical signs are very close to Foot and Mouth Disease and Vesicular Stomatitis, any observance of vesicular lesions should immediately be reported to the State Veterinarian's office. The State Veterinarian can be contacted at (402) 471-12351 or the Federal Veterinarian can be contacted at (402) 434-2300. Animal and Plant Health Protection (APHP) field veterinarians will take the appropriate samples. Livestock manifesting vesicular lesions are considered possible foreign animal disease suspects. Samples submitted by APHP foreign animal disease diagnosticians are processed and paid by the USDA. Please do not send any samples directly to the Veterinary Diagnostic Center, as this can potentially allow the spread of a foreign animal disease and delay reporting of results.

- - -submitted by Elisa Salas, DVM, Pathology Resident,
Veterinary Diagnostic Center

Histochemical and Immunohistochemical Stains Available at the Veterinary Diagnostic Center

The histology laboratory provides support for the pathologists in terms of not only providing routine hematoxylin and eosin stained slides, but an extensive repertoire of special stains. Those special stains fall into two categories; histochemical stains and immunohistochemical stains. The pathologist uses histochemical and immunohistochemical stains as tools to help recognize changes in cells and tissues that are abnormal or detection of infectious agents such as bacteria, protozoa, and fungi. Thus special stains and IHC aid in providing a diagnosis. Histochemical stains are based on chemical reactions between laboratory chemicals and components in cells to produce different colors and patterns unique to specific cell components. Immunohistochemical stains are based on an antibody against specific cell components or infectious agents. If a cell or tissue contains that specific component or infectious agent, the antibody will bind and with additional staining steps, that component or infectious agent can be recognized in those cells or tissue.

Many of these special stains are used in characterizing various tumors, recognizing cell structural changes, identifying certain metals or ions in tissues, and identifying various viral or bacterial infections. The following table lists the histochemical and immunohistochemical stains offered by the histology laboratory in the VDC. Additional tests are added as the need arises or technology advances. If you are uncertain if a certain test is offered by the histology laboratory, feel free to contact the VDC.

| Histochemical Stain | Immunohistochemical Stain | Immunohistochemical Stain |
|---------------------|---------------------------|----------------------------|
| Acid Fast | Actin | GFAP |
| Gram | Bovine coronavirus | IBR |
| Congo Red | Bovine rotavirus | IgG |
| Elastin | Brachyspira | Lawsonia |
| FITES | BRSV | Leptospira |
| Giemsa | BVD | Melan A |
| GMS | CD18 | Neospora |
| Luxol Fast Blue | CD34 | Porcine Rotavirus |
| Oil Red O | C-kit | Parvovirus – canine/feline |
| PAS | CWD | PRRS |
| Rhodamine | Cytokeratin | Scrapie |
| Trichrome | Desmin | Swine Influenza |
| Von Kossa | Factor IIV/CD31 | Synaptophysin |
| Warthin Starry | | TGE virus |
| | | Vimentin |
| | | West Nile Virus |
| | | |

- - submitted by Bruce Brodersen, DVM, PhD
Veterinary Pathologist, Veterinary Diagnostic Center

Bacteriology/Parasitology News

New Trichomonas Transit Tubes

Biomed Diagnostics has recently added a new product to its Trichomonas transport items; the TF Transit tube. The tube contains the same media as the pouches, but is designed for ease of collection, transport and DNA extraction for PCR. This tube is made specifically for PCR testing. The pouches are still available for culture. The collection and transport recommendations will not change. Tubes will still be inoculated with 0.5-1ml of sample, incubated at 37°C or 98°F for 18-24 hours, and frozen prior to shipment on ice. When ordering transport media from the lab, you will need to specify if you want tubes or pouches. Please remember that with the recent changes in the postal service, supplies sent via USPS can take up to 3 days for delivery. If supplies are needed right away, they can be shipped via FedEx overnight at an additional charge. Please let the staff know when ordering if you will require overnight shipment.

Bovine Respiratory Disease

A recently reclassified organism has been associated with opportunistic infections in bovine respiratory disease. *Gallibacterium anatis* is part of the Pasteurellaceae family that was originally classified as part of the *Actinobacillus saproginidis* complex or *Pasteurella anatis*. This new genus consolidates all of these organisms into one novel species, *Gallibacterium anatis*, and two biovars, hemolytica and anatis. Historically, these organisms have been associated with salpingitis and peritonitis in layer hens and other poultry species; however the VDC has recently been isolating some of these organisms in bovine respiratory disease cases. Earlier reports from Europe have also identified these strains in bovine lungs. Biochemically, this organism can be quite similar to *Bibersteinia trehalosi*, (formerly *Pasteurella trehalosi*) another related respiratory pathogen, making accurate identification crucial in distinguishing these two organisms.

Canine Otitis

Cases of canine otitis externa can be complicated and often frustrating to treat. Diagnostically, they can present a challenge as well. One of the major complicating factors in diagnosing a microbial cause is the number of infectious agents and underlying conditions that can contribute to the condition. Allergic dermatitis and atopy can predispose animals to inflammation of the ear which can lead to infection. Bacteria, yeasts, parasites, and viruses have all been associated with otitis. Many of these organisms are also normal flora or commensals of canine ears that can overgrow and increase the amount of inflammation in the ear. For example, coagulase positive *Staphylococcus* and beta hemolytic *Streptococcus* are some of the most common isolates from both normal and diseased ears. Yeasts such as *Malassezia* can be present in normal ears, but overgrowth can contribute to otitis. Some infections associated with chronic otitis externa are almost never isolated from normal ears. These include *Pseudomonas* and *Proteus*.

To determine what organisms may be present in cases of otitis externa, samples can be taken and sent to the VDC for examination and culture, ideally from an untreated ear. If a large amount of exudates is present within the ear canal, infected ears should be thoroughly cleaned and flushed using a ceruminolytic ear cleaner followed by flushing with sterile isotonic saline. Then, culture swabs can be inserted into the horizontal ear canal through a sterilized otoscope cone and samples taken for cytology and culture. The faculty and staff at the VDC can then assist you in determining what pathogens are present in the ear and what the significance may be. Antimicrobial susceptibility panels are very useful in determining therapy, especially in cases of *Pseudomonas*. Please feel free to contact the VDC if you have any questions about how we can assist you in your otitis cases.

- - - submitted by J. Dustin Loy, DVM, PhD, Faculty Supervisor, Microbiology Lab and by Deb Royal, Supervisor, Microbiology Lab, Veterinary Diagnostic Center

Biopsy Services at VDC

The Veterinary Diagnostic Center provides biopsy services for all species. The price is \$27 per site and there is an accession fee charged of \$11 per submission. Total price for histology services performed at the VDC is significantly lower and in most instances, much quicker than those provided by commercial laboratories. All biopsies are measured and margins inked prior to processing. Unlike most commercial laboratories that charge additional fees for description and interpretation, a complete description with interpretation is included in the report. Expected turnaround time is 1 to 2 business days (excludes weekends and holidays) if no special stains or immunohistochemical (IHC) stains are needed. If a special stain or an IHC stain is required for diagnosis, turnaround time can increase to 2 to 3 business days depending on the type of special request.

Examples of the difference in pricing between the VDC and locally available commercial laboratories for biopsy services are as follows:

| | VDC | Commercial Laboratory A | Commercial Laboratory B |
|----------------------------------|----------|-------------------------|-------------------------|
| Biopsy with Complete Description | \$38.00* | \$80.10 | \$79.29 |
| Additional site | \$27.00 | \$28.45 | \$28.00 |
| Total | \$65.00 | \$108.55 | \$107.29 |

*Includes \$11.00 admission fee

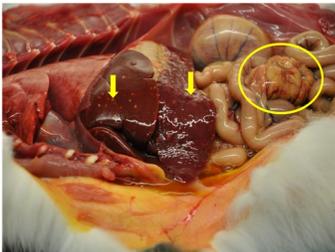
Biopsy and specimen mailers are available at no charge upon request.

The VDC is committed to exemplary customer service, and comprehensive diagnostic testing at competitive prices while providing the highest quality of diagnostic veterinary medicine under strict QA/QC guidelines imposed by the American Association of Veterinary Laboratory Diagnosticians.

- - submitted by Alan R. Doster, DVM, PhD,
Director, Veterinary Diagnostic Center

Tularemia

In the past month we have diagnosed two cases of tularemia in outdoor cats living in eastern Nebraska. Tularemia is the disease caused by infection with the bacterium *Francisella tularensis*, and is endemic throughout the continental United States, as well as many other countries. Typically, it is spread through contact with infected rodent or arthropod vectors; although, inhalation and ingestion can also lead to infection. From our domestic animals, outdoor cats are the species most typically infected with the organism due to their propensity to hunt and to be in direct contact with the rodent reservoirs. Unless treated with antibiotics, infected animals often develop an acute septicemia and die within a few days of contracting the disease. Clinical signs include a high fever and swollen lymph nodes. Necropsy of the animal typically demonstrates small pale foci of necrosis disseminated throughout the liver, spleen, and lung, as well as lymphadenopathy. Infections in large animals are not common, although there are published reports of tularemia in sheep flocks during periods of heavy tick infestation causing late term abortions, and listlessness and death in lambs and occasional adult animals. Tularemia is zoonotic, highly infectious, and classified as a potential bioterrorism agent by the CDC. Any suspected cases should be sent directly to the Diagnostic Laboratory for confirmation and proper disposal of infected tissues.



Severe mesenteric lymphadenopathy (circle) and pinpoint foci of necrosis in liver and spleen (arrows)

- submitted by Seth Harris, DVM, PhD, Veterinary Pathologist,
Veterinary Diagnostic Center

US FDA Authorizes Blending of Aflatoxin-Contaminated Corn from the 2012 Corn Harvest

The Nebraska Department of Agriculture (NDA) requested and was granted temporary relief from the prohibition of blending aflatoxin-contaminated corn with other corn to reduce aflatoxin concentrations below action levels. Provisions of the authorization summarized below are detailed in a letter from NDA, Subject: 2012 Nebraska Corn Crop, dated Sep 25, 2012. The letter is posted on the NDA's website at www.agr.ne.gov under "Aflatoxin Information for Grain Handlers" in the scrolling information box.

Aflatoxin-contaminated corn may be used as directed by action levels published in FDA Guidance Document, Compliance Policy Guide – Section 683.100. That document may be found on the NDA's website under "Aflatoxin Information for Grain Handlers."

Prior to blending, the seller must enter an agreement with NDA in which the seller agrees to comply with the provisions for blending aflatoxin-contaminated corn. Contact NDA for details about this provision.

Aflatoxin-contaminated corn in excess of 20 ppb but below 500 ppb may be blended with other corn to achieve an aflatoxin action level for use as or in animal feed. Blended corn may be fed or used in feed for mature poultry, breeding swine, finishing swine over 100 lb, breeding cattle, or finishing (feedlot) cattle provided use is in compliance with aflatoxin action levels specified in FDA Guidance Document, Compliance Policy Guide – Section 683.100.

Each batch of blended corn must be analyzed using USDA Grain Inspection, Packers and Stockyards Administration (GIPSA)-approved sampling, analysis and testing protocols. Prior to shipment and use of the blended corn, the seller must certify that the aflatoxin level of the blended batch does not exceed the action level appropriate for the intended species.

The seller of the blended corn must provide the purchaser with a copy of the analytical results generated under the 4th provision listed above and the seller needs to obtain written assurance from the purchaser that the blended corn will be used as specified in provision 3 above.

Blended corn needs to be clearly identified and labeled "For Animal Feed Use Only."

Corn contaminated at greater than 500 ppb cannot be blended.

For more information contact Steve Gramlich, NDA Feed Program Manager, 402-471-6845 or 402-471-2351
— submitted by Michael Carlson, PhD, Diagnostic Toxicologist

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