Diagnostic INSIGHTS

Volume 1, Number 3 *Summer 2007*

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I am pleased to make two introductions in this issue of Diagnostic Insights: 1) a new BVDv test using real time rt-PCR technology and 2) a new logo for the KSVDL. We are expecting both to have a positive effect on our identity and service for our clients.

Bovine Viral Diarrhea virus (BVDv) is a significant endemic disease of cattle. We are highlighting the virus/disease in this issue, utilizing the tremendous expertise of faculty in the newly formed K-State Beef Cattle Institute. In addition, we proudly introduce a new BVDv test based on PCR technology that is truly state-of-the-art. The German technology is made available through collaborative and innovative arrangements with Enfer Diagnostics and Ag Professional Services. The technology is presently used in numerous European regulatory programs where resulting quality and turn-time are especially critical. We are extremely pleased to be the first to offer this first-rate test in the USA.

The logo is the creation of our very own Mal Hoover in the College of Veterinary Medicine. We believe the logo brings identity to the KSVDL and captures the essence of who we are and what we want to become. Our goal is to be innovative in the tests that we develop and offer, the collaborations we establish, the way(s) we add value, and the energy we bring to all services. We are passionate about collaborating (partnering) with our clients and all stakeholders so we are better able to add value wherever it is needed and expected. Furthermore, we believe that we are able to provide many of our stakeholders with unique blends of research and service because of viable, effective, and innovative collaborations. These collaborations truly add value for our clients, and we expect it to increase in the future. We believe the new logo not only represents our passion but will also provide our long-term focus.

Please be aware that selected test prices increased July 1, 2007. I encourage you to go to our website to learn about the changes or alternatively, call the KSVDL office at 785-532-5650 or 866-512-5650 (toll free).

Do not hesitate to contact me if you have questions, ideas or concerns. I can be reached at 785-532-4454 or ganders@vet.k-state.edu. We appreciate your time, interest and business!

ANNOUNCING

Upcoming Test and Fee Schedule Changes Effective July 1, 2007

Price adjustments, while always difficult, have become necessary since our last change in 2005. We have incorporated numerous changes in our facilities at your recommendations to improve our service level and capabilities. Additionally, we have experienced substantial increases in the costs of testing supplies, reagents and equipment maintenance during the past two years. Please visit the KSVDL website, www.vet.k-state.edu/ksvdl, to view selected test and fee changes.

Bovine Viral Diarrhea Virus: A Diagnostic Challenge

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Background – Disease and Risk

Bovine Viral Diarrhea virus (BVDv) is an immunosuppressive virus affecting cattle in a multitude of manners. The varied presentation makes this disease difficult to identify in cow herds and the signs of a BVDv infection may be very subtle. The syndrome causes economic problems due to reduced herd fertility and increased disease rates.

The Persistently Infected (PI) animal is a unique reservoir for BVDv. These cattle are the result of in utero exposure to the noncytopathic biotype of BVDv prior to the development of a competent fetal immune system at about 125 days of gestation. Persistently infected animals are the primary method for the disease to propagate over time. PI cattle consistently shed BVDv in relatively high levels and this exposure to the breeding herd can result in formation of new PI calves. PI animals result in propagation of BVDv in the herd and decreased pregnancy percentages compared to herds without a PI animal. It is prudent and most effective to control and/or eliminate BVDv at this stage rather than later in the life cycle.

Livestock managers are faced with risk assessment and management decisions regarding the biosecurity implications of incoming animals with an unknown history of disease exposure. Breeding herds that introduce new animals to the herd face the risk of importing a BVDv PI or transiently infected animal. To mitigate this risk, PI animals must be accurately identified prior to herd introduction. Multiple diagnostic tests are available to determine the BVDv status of incoming animals and all have an associated cost.

Economic feasibility of determining the BVDv PI status of animals upon arrival depends to a large degree on how common PI animals are in a population. Previous research has illustrated that PI calves entering the feedyard phase of production are fairly rare (about 3 per 1,000 calves); however, very little work has been done in mature animals. The relative risk of importing a BVDv PI animal varies based on the type (or age) of animal imported.

Testing Considerations

Identification of PI calves is critical, and visual appraisal is not an accurate method of discovering these animals. Persistently infected animals may be weak, depressed, slow growers, or may appear clinically normal; the only accurate way to identify them is through proper diagnostic testing. Various diagnostic methods for identifying BVDv infections include: serology, virus isolation from serum or other tissue, reverse-transcription polymerase chain reaction amplification (rtPCR), antigen-capture enzyme-linked immunosorbent assay (ACE), and immunohistochemistry (IHC) staining of viral antigen in skin biopsy. These tests have varied properties and abilities to identify active or persistent BVD infections; therefore, identifying the testing goals is critical when considering appropriate diagnostic methods. Collection of skin biopsies (ear notches) for IHC or ACE testing has been recommended for identification or confirmation of BVDv PI animals.

Testing and immediate removal (prior to exposure to rest of pen or herd) of all PI animals is the best method to minimize the deleterious effects of the virus. This strategy is labor and cost intensive and each operation should make the decision for testing protocols based on an economic analysis. The decision to screen a group of cattle for BVDv should be based on the known epidemiologic data, diagnostic test sensitivity and specificity data, and the economic costs of the condition and its treatment.

Identification and removal of BVDv PI animals in high risk populations is a reasonable approach to decrease viral exposure to other animals in the operation. Disease prevalence, cost of testing, and the expense associated with an unidentified PI animal should be considered when preparing an economically viable testing strategy. At this time the literature does not support the economic feasibility of testing all animals in order to remove PI animals.

Control Strategies

Biosecurity to prevent herd exposure to PI cattle is critical. Individual testing of all animals that arrive on a farm provides the highest level of security, but may be economically infeasible. Resources may be better allocated to areas or specific groups of animals presenting the highest risk of disease entry. Therefore, testing and biosecurity efforts should be emphasized in areas known to contribute to formation or introduction of BVDv PI animals.

Replacement heifers and bulls that enter the breeding herd, whether raised or purchased, should be tested and confirmed to not be PI prior to the start of breeding. If a pregnant animal is purchased, it should be segregated from the breeding herd until both the dam and the calf are confirmed to not be PI. Although the dam is unlikely to be a PI, current testing methods can not determine the status of the fetus until it is born. These new calves should be tested after birth and prior to introduction to the breeding herd. Fence line contact with neighboring cattle should be managed so that stocker cattle are not adjacent to the breeding herd during early gestation (< 130 days), and other cowherds are not adjacent unless they also have strict biosecurity and vaccination programs in place.

Multiple testing strategies are available for BVDv and the veterinarian is in a good position to help producers select the correct program for their unique situation.

KSVDL Leads the Way for New BVD Testing Technology

Kansas State Veterinary Diagnostic Laboratory (KSVDL) has recently completed a training course which will allow it to become the first laboratory in the United States to utilize the most sensitive BVDv test in the world. The technology was designed specifically for the detection of BVDv in both genotype 1 & 2 and all sub-genotype strains, including the difficult to detect HOBI and H138 strains. AnDiaTec manufactures the reagents used in the KSVDL.

AnDiaTec has developed a unique and proprietary lysis buffer that eliminates the need for the costly, labor-intensive and time-consuming RNA extraction step. When this lysis buffer is coupled with AnDiaTec's proprietary reagents, there is confidence in detecting a single positive ear notch in a pool of samples within a few short hours.

The technology is so sensitive that it is possible to differentiate a Persistently Infected (PI) animal from a transiently infected animal in a pooled sample of blood, which could be particularly beneficial if someone wanted to do a complete herd evaluation.

AnDiaTec developed the reagents and a cost effective automated instrumentation testing system in close association with the German, Austrian and Swiss BVDv eradication programs and key opinion leaders around the world. Some labs are expecting to test over 1 million animals per year or 4,000 to 5,000 tests per day. Therefore, high quality results, smooth processes and fast turnaround are a must.

We are extremely pleased to be the first US laboratory to provide the AnDiaTec reagents to our clients. In the past, PCR technology was viewed as too difficult, unreliable or too costly to run in a high throughput environment. However, now KSVDL staff are able to effectively and efficiently use the simplified AnDiaTec reagents and automation to provide superior results and service for our clients.

Additional Information:

1. Samples to Collect: ear notches (dry) or blood (unclotted)
2. Shipping: on ice within 2 days of collection – overnight recommended, please freeze the ear notches if shipment cannot occur within 2 days
3. Results: via fax, webAccess, email or phone
4. Turn-around time: 24 hours after receipt of sample
5. Pricing: $4.20/head, $3.60/head for 1000+ annually, and $3.30/head for 10,000+ annually – call KSVDL to set account and pricing (866-512-5650)

Patricia Payne, DVM, PhD

Trichomoniasis Testing in Bulls

by Patricia Payne, DVM, PhD and Sara Mailen, BS

Over the last few years we have seen an increase of Tritrichomonas positive bulls. With this increase, we have also seen an increase in testing. It is critical to work together to get these working bulls tested correctly the first time. The InPouch™TF system is not perfect; it does take time and effort to get good samples that can be read and resulted in a timely manner. A large number of pouches are reaching the KSVDL 3-5 days after inoculation, but they should be received in the lab within 30 hours of inoculation. Overnight or one-day delivery is definitely best, or you can deliver them personally to KSVDL Receiving. Special arrangements for after hours or Saturday delivery can be made, but only if you call ahead.

Please look for more information about Tritrichomonas in an upcoming issue of Diagnostic Insights or in the article posted at www.vet.ksu.edu/depts/clinicalsciences/agpract/articles/Trich_recommendations.pdf.
If you have any questions, please call Parasitology at 785-532-4619 and we will be happy to answer them for you.

Diagnostic Seminar available on K-State VetBytes 24/7

Presented by Kristin Patton, DVM, PhD, DACVP, Assistant Professor, Pathology

Proper Submission of Diagnostic Specimens to Ensure Shipping Compliance and Maximal Results

VetBytes 24/7 seminars are offered on-line at your convenience. Participants watch a presentation over the internet then take a quiz. With a passing grade, participants are mailed a certificate of participation for the seminar.

Contact Linda Johnson (785-532-4024, johnson@vet.k-state.edu) or Marci Ritter (785-532-4020, mritter@vet.k-state.edu) for information on this seminar and others offered in the VetBytes 24/7 on-line format. Go to www.vet.k-state.edu for the current list of offerings through K-State Veterinary Medical Continuing Education and Outreach.

The primary mission of the Kansas State Veterinary Diagnostic Laboratory (KSVDL) is to develop and deliver accurate, innovative and timely diagnostic and consultative services to the veterinary and animal health community in Kansas and the nation. The KSVDL is a full-service, AAVLD-accredited laboratory, offering a complete range of diagnostic services for all species.

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For information on connecting to WebAccess for real-time test results, contact the KSVDL IT department at 785-532-4682.

Tour of KSVDL for incoming senior veterinary students in preparation for their diagnostic lab rotation. Charlene Davis of the Receiving Department is behind the window.

Visit our website at:
Web: http://www.vet.k-state.edu/depts/dmp/service/index.htm

***Diagnostic Insights* welcomes your suggestions for future articles or comments about current articles.**
Send your ideas to Barbara Barkdoll at bbarkdol@vet.k-state.edu.

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