Diagnostic Insights

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KANSAS STATE VETERINARY DIAGNOSTIC LABORATORY

Accredited by the American Association of Veterinary Laboratory Diagnosticians **September 2011**

Personnel Profile — John Dwyer

John Dwyer joined the staff of the Kansas State Veterinary Diagnostic Laboratory in October of 2010. In his role as the Necropsy Technician, John's responsibilities include the care and maintenance of the necropsy floor and equipment. John also operates the College's bulk autoclave and tissue digester. He is a member of the Receiving area of the KSVDL; therefore, interacting with clients, faculty, staff, and students is an important part of his duty list.

A native of Benton County, Missouri, John received his undergraduate degree in Animal Science/Pre-Veterinary Medicine from Southwest Missouri State University in 2006. During and following his time at SMSU, John served as herdsman for a grass-based dairy and as an assistant in a rural mixed-animal practice. He also worked on a stocker operation, a large livestock-marketing facility, and on a large-animal reproductive practice. Shortly after moving to Manhattan, John became the Assistant Manager of K-State's Dairy Teaching and Research Center, a position he held until joining the KSVDL.

John moved to Kansas in 2007 in pursuit of a professional degree from K-State's College of Veterinary Medicine. He hasn't been accepted into the DVM program yet, but he's far from giving up. John is applying to the College of Veterinary Medicine again this fall in hopes of reaching his goal of serving as a rural mixed-animal veterinarian.

John can be contacted at: jpdwyer@vet.k-state.edu or 785-532-4477.

Biopsy Margins & Lasers—Dr. Kelli Almes

The KSVDL is seeing an increasing number of skin and gingival biopsies taken with a surgical laser. These biopsies contain an artifact known as "char." Char is the zone at the periphery of the biopsy that is heated by the laser which drastically alters the histologic appearance.

This heated area contains coagulation with condensation, hyalinization, and loss of fibrillar texture of the collagen within the dermis and necrosis of the epidermis.

In cases of dermatologic disease, this obscures any changes and can significantly change the size of the area of skin that can be adequately evaluated.

With very small skin biopsies the entire section of tissue can be charred rendering the biopsy unsuitable. In the case of neoplasms of the skin this peripheral area often coincides with the surgical margins rendering them unsuitable for evaluation. **Therefore, it is recommended that all skin and gingival biopsies be taken with a scalpel or punch biopsy.**

In Figure #1 is a skin biopsy taken with a scalpel.

Figure #2 is a char of this entire section of skin.

Figure 1

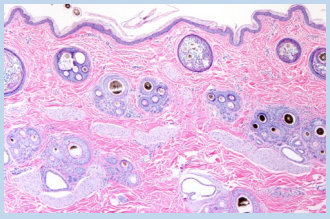
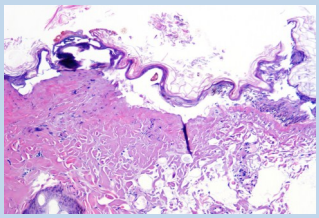


Figure 2



Dr. Almes may be contacted at kalmes@vet.k-state.edu or 785-532-3995.

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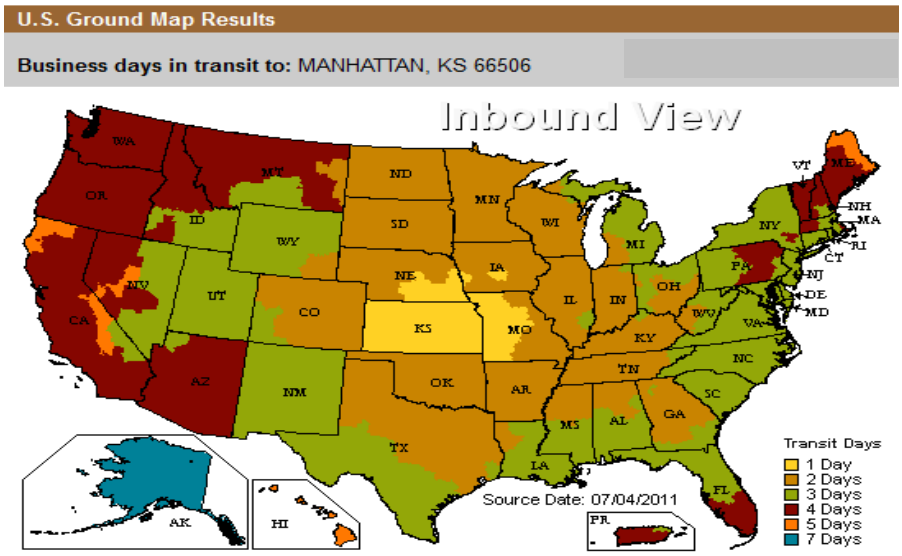
Time-in-Transit to KSVDL Using UPS Ground

The United Parcel Service map below indicates that packages shipped from many practice areas using UPS ground will arrive at the KSVDL the next day. Using ground does not guarantee next day delivery, but UPS has shown us data that suggests >99% of the packages do arrive at our laboratory the next day.

Using UPS ground instead of guaranteed overnight delivery may be a way to reduce your shipping costs.



Kansas Producer Seminars

Through a collaborative effort between the KSVDL, the Ulysses Veterinary Clinic and several county extension agents, several cow-calf producer-focused Trichomoniasis seminars were conducted in Western Kansas. The seminars took place in Syracuse, Ulysses and Elkhart with over 100 producers in attendance.

Dr. Gregg Hanzlicek, from the KSVDL, gave a presentation on the Trich organism, mode of transmission, disease prevalence, and testing options.

Dr. Derek Pridey, from the Ulysses Veterinary Clinic, followed up with examples of Trich positive herds in their practice area, and offered advice on Trich disease management, and weaning/drought management.

Producers at the Elkhart, Kansas Tritrichomoniasis seminar

We're on the web @ www.ksvdl.org

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Help us help you:

- E-mail and Fax: Please make sure we have your correct email and fax information.

Rabies in Cats—Dr. Mike Moore and Rolan Davis

"There is no rabies in cats in Kansas" came the confident statement over the phone from an M.D.

As I shuddered slightly in my chair, trying to compose myself so as not to say something politically incorrect, I thought to myself, how many M.D.'s believe this and do not make the phone call?

P.S. We have heard this statement from veterinarians and lay people also. So I am not picking on single-species peers, it just made a better story.

I won't write what I wanted to respond with, as it would be inappropriate for some young veterinarians' ears.

In the era of One Health, we have the responsibility to educate our single-species peers about zoonotic diseases which we deal with every day. You may say "I do not deal with rabies every day".

Most of you vaccinate animals against rabies which is much more than our SSPs do. You understand the disease well enough to know vaccination beats death every day.

Cats are our most commonly diagnosed small companion-animal species in Kansas and Nebraska.

I challenge all of you to educate early and often so we don't lose someone to rabies on our watch.
Mike & RD

We may be reached for questions or comment at:
mcmoore@vet.ksu.edu
or 785-532-4503.

The "NIs" and Outs of Antimicrobial Susceptibility Testing—Dr. Brian Lubbers

That is not a misprint in the title. The KSVDL Microbiology Laboratory recently revised our antimicrobial susceptibility reporting to match the guidelines set forth by the Clinical and Laboratory Standards Institute (CLSI). **This change has resulted in more "NI" or "No Interpretation" classifications showing up on susceptibility reports.**

So what does "NI" really mean? A classification of "No interpretation" means either: there is no evidence for relating treatment outcome to *in vitro* MIC or laboratory methods cannot be standardized to result in consistent testing of the organism. "NI" does not necessarily mean the antimicrobial is unusable, given the following general guidelines:

A pathogen with an MIC that is greater than the highest tested concentration should NOT be considered for therapy.

The issue in this situation is that the actual (endpoint) MIC for that specific bacterium is unknown.

For example, if the MIC of an equine *Staphylococcus* isolate to enrofloxacin is reported as ">2 µg/ml"; the actual MIC may be 2.1 µg/ml (and increasing the dose may be effective) or the actual MIC may be 20,000 µg/ml (and dose adjustments will not be effective).

Situations exist in which interpretive criteria are available for another pathogen causing the same disease process, in which case some extrapolation may be warranted. For example, ceftiofur has interpretive criteria for swine respiratory isolates of *A. pleuropneumonia, P. multocida, S. choleraesuis,* and *Strep. suis*. A swine *B. bronchiseptica* isolate would be reported as "NI" regardless of the actual MIC. However, the disease process and blood/tissue concentrations would be expected to be similar, so extrapolation would be a viable option. As the disease process changes from the approved interpretive criteria or when bacterial pathogenesis (intracellular organisms) changes dramatically, the extrapolation of "S", "I" or "R" becomes accordingly less reasonable.

Although it provides very valuable information, it is important to remember that the susceptibility report is only one piece of information the clinician should use in choosing an appropriate antimicrobial. Other factors, such as safety, site of infection, concurrent disease processes, ease of administration, clinical experience with the antibiotic and cost (among others), should also be considered.

If you have questions regarding susceptibility test interpretation, **Dr. Lubbers may be reached at:** blubbers@vet.k-state.edu **or 785-532-4012.**

Microbiological Definitions

Minimum Inhibitory Concentration [MIC] – the lowest concentration of an antibiotic that inhibits visible growth of a bacterial organism.

Interpretive Criteria – the classification of a bacterial isolate, based on the MIC, as either "Susceptible", "Intermediate" or "Resistant". Interpretive criteria are meant to provide guidance on the expected clinical outcome for that antimicrobial – pathogen combination.

Breakpoints – the MIC values are associated with the interpretive criteria. The marbofloxacin breakpoints for feline dermal infections are: 1, 2, 4. Bacterial isolates with a MIC ≤1 are "susceptible", isolates with a MIC=2 are "intermediate" and isolates with a MIC of ≥4 are "resistant".

Interpretation of Selected Canine and Feline Serological Titers
Dr. Dick Hesse and Dr. Bill Fortney


Vaccine induced immunity is a multifaceted process involving antigen processing, humoral immunity, cell mediated immunity, local immunity and cell memory. **Predicting whether a patient is protected against a disease based solely on a single serum titer is a gross over simplification of this complex immune process.** However, despite the drawbacks, the use of serum titers in making logical and informed vaccine–related decisions is gaining some popularity especially in animals prone to adverse vaccine reactions.

Key Points:

- A positive titer will protect against development of the clinical signs of disease, but it may not prevent the patient from being infected with the virus.
- Titer results will vary depending on the laboratory and testing methodology used.
- Even among the experts, there is no clear consensus on exactly what titer is considered protective for each specific disease.
- Titers only measure circulating humoral antibodies and not cell mediated immunity, local immunity, cell memory or the anamnestic response to a viral challenge.
- Titers measure the patient's immune status at a single point in time and may not necessarily reflect the patient's past or future immune status.

Serological titers can be useful in determining whether an animal is protected against a specific disease (positive or protective titer).

CANINE

There is an excellent correlation between a "positive" titer and protection against viral challenge with canine distemper virus (CDV); canine adenovirus 1(CAV1); and canine parvovirus2 (CPV), and Rabies (RV).

CDV: SN $\geq$ 1: 32
CAV1: SN $\geq$ 1: 32
CPV2: HI $\geq$ 1: 80

FELINE

In cats there is an excellent correlation between a "positive" titer and protection against challenge with the feline panleukopenia virus (FPL) and rabies virus (RV) but only a good correlation with feline herpesvirus (FHV1) and feline calicivirus (FCV) protection.

FPL: HI $\geq$ 1: 16
FCV: SN $\geq$ 1:16
FHV1: SN $\geq$ 1:16

Serological titers can be used to identify potentially susceptible animals (a negative titer). Because the titer only measures humoral immunity, patients with negative titers may or may not be protected if challenged and therefore may be considered possible candidates for re-vaccination.

For more information about titers or to request a list of references, contact either Dr. Hesse at: dhesse@vet.k-state.edu (785-532-4457) or Dr. Fortney at: wfortney@vet.k-state.edu (785 532-4605).

Changes in biopsy reporting method:

Our biopsy reporting methods are being revamped as of October 1. The standard biopsy report will now include a diagnosis and comments. If you wish to receive an extended report including the full histopathologic description, please indicate this on your submission form. The extended report will have an additional fee.

Developing, Delivering Accurate, Innovative Diagnostic Services

The 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 while providing support for teaching, training, and research programs.

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We're on the web!
www.ksvdl.org

Continuing Education

September 24, 2011
Natural Disasters. . . . .What About the Animals?
Human Animal Bond Conference

September 24, 2011
SCAAEP Fall Equine Conference: A Focus on Reproduction

November 5-6, 2011
Annual Equine Reproduction Conference for Horse Breeders and Farm Personnel: From Egg to Foal

http://www.vet.ksu.edu/CE/Conference.htm

Test Results & Schedules

Laboratory results may be accessed online 24 hours a day, 7 days a week!!

To set up an account go to:

www.ksvdl.org

KSVDL will be closed on the following days:

Thanksgiving: November 24 and 25, 2011
Christmas: December 26, 2011

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