

Wyoming State Veterinary Laboratory Newsletter – June 2009

University of Wyoming

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MESSAGE FROM THE DIRECTOR

A lot has certainly happened since the January Newsletter, both good and bad. I was told once that the difference between a realist and an optimist is that an optimist is naïve. I prefer to think of myself as a real optimist and, to me, the good news certainly outweighs the bad. Furthermore, we can also use some of the bad news to make the WSVL stronger and better.

The best news yet is the receipt of funding for a new addition to our facilities that will include safe and secure biosafety level-3 necropsy and laboratories. Thanks to the Wyoming legislature, Governor Freudenthal, and all of you who supported this new addition for the Laboratory. Site preparation has been in progress for approximately two weeks and preliminary foundation work should begin the week of June 22. Completion should take 18 – 24 months. The new construction will obviously present challenges but we are committed to providing the same level of diagnostic service during the disruptions that will inevitably occur.

The new laboratory information management system (LIMS) for WSVL is about ready, and despite some delays, we hope to have it implemented sometime this summer. As noted in a previous Newsletter, delivery of reports will be flexible. You, our clients, can pick from several options to access your reports including web-based access, email, fax, or phone. This has been a long time coming. We expect some glitches during the transition but hope to minimize these.

In the next few months, the WSVL will have two new faculty members. After several months of negotiations, the Hathaway Excellence Chair in prion biology has been filled by Hermann

Schätzl, a medical virologist turned prion biologist from Germany. He brings many years of innovative research in prion biology to the University and will help strengthen our efforts in chronic wasting disease, scrapie, and other transmissible spongiform encephalopathies. Hermann will arrive in January 2010. Probably of more interest to you from the diagnostics standpoint, Chungwon Chung has accepted the position of veterinary virologist and will begin in early August. Chungwon received DVM and MS degrees from Kyougpook National University in South Korea. He completed his PhD in veterinary virology at Washington State University studying equine infectious anemia under Travis McQuire. Most recently, Chungwon has been with Fort Dodge in their vaccine development group. He has expressed a commitment to diagnostics and we look forward to his arrival. I hope you will take an opportunity to welcome these new faculty members.

The economy has been bad news for all of us. We have lost and likely will not replace a staff member, during the foreseeable future, in regulatory serology. This will place an added burden on the two remaining staff members. We will likely need to make adjustments in the way we do things during the next few weeks but we hope to make these changes as invisible to our clientele as possible. I'm sure that the economy has had some effect on your practices as well. As a result, I'm sure you will agree that you expect and need to receive the most bang-for-your-buck when it comes to your diagnostic testing dollars. With the fee cap that has historically been applied to individual cases submitted to the WSVL, we have been liberal in adding tests to individual cases to cover all possibilities, realizing full well that some of these tests have little hope of contributing substantially to the results. In the future, we will need to be more conservative in the tests we apply to individual cases; testing will be limited to only to those you request or that have the best chance of providing the answers you need. From your perspective,

you can definitely help us in this regard. We have some clients that only want what they ask for and others who leave the testing options entirely up to us. This is certainly appropriate but there is no way that all the sections of the WSVL can remember the preferences of each individual client. We will rely on you more and more to request the specific tests you need and to communicate to us the questions you want answered. Thanks to all of you for your support. You have many options for your testing budget and we hope you continue to rely on your state laboratory.

Don Montgomery
Director, WSVL

INTERESTING CASES FROM WSVL AND OTHER TIDBITS

Tritrichomonas foetus infection in cats

Tritrichomonas foetus is a single-cell bovine venereal parasite. Trichomoniasis in cattle typically causes an asymptomatic infection in the bull and abortions in the cow. Substantial economic loss in beef industry is experienced across Wyoming and the adjacent states due to reduced numbers of calves in herds caused by abortion, culling infected bulls, veterinarian service and diagnosis fees.

T. foetus infection in cats associated with diarrhea is an emerging disease with the first case reported in 1996. Since then many more cases have been appeared in literature. Up to one third of cats with diarrhea were found infected with this parasite as possible cause of the symptom. It is common in purebred and shelter cats with no particular breed being more susceptible than the others. Infected cats especially kittens and young animals may experience diarrhea. The diarrhea is characterized by cow pie-like stools that are

often gassy and malodorous. Sometimes there are mucus and/or fresh blood.

Diagnosis of *T. foetus* infection in cats depends upon finding the parasites in feces. When parasites such as *Giardia*, worms, and coccidia have been ruled out in cats with diarrhea, *T. foetus* should be considered. Three methods can be used. Direct fecal smear is cheapest and quick but with very poor sensitivity. Fecal culture is obtained by inoculating feces in growth medium with antibiotics and cultured at 37°C for at least 24 hours. The sensitivity is very good but it detects only live parasites in fecal samples. The third method is polymerase chain reaction (PCR). The sensitivity is excellent and PCR can detect both live and dead parasites in samples. However, it is the most expensive of the three methods. Fecal samples should be always collected from fresh, witnessed stools. Keep samples warm and do not freeze samples before tests. Moisture is also important for the parasites survival outside of animals. The wetter the longer the parasites will survive. Therefore, always use the wetter part of the stool for tests.

Infected cats should be treated with Ronidazole. The recommended dose for cats is 30 mg/kg body weight orally once a day for 14 days. There is no evidence that higher dose or longer treatment period is more effective. In fact, higher doses will greatly increase the likelihood of neurological side effect.

Chaoqun Yao, MD, PhD
Veterinary Parasitologist, WSVL

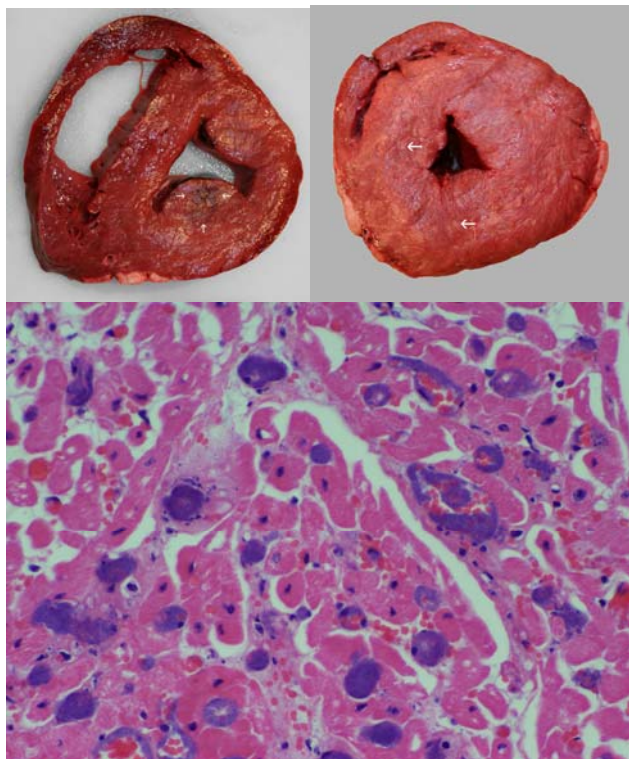
Myocarditis due to *Histophilus somni* (*Haemophilus somnus*) in Wyoming beef operations

With the cooperation of Dr. Randy Hunter, who first noticed the problem, the laboratory has been investigating the importance of cardiac

histophilosis on two Wyoming properties. Histophilosis is due to *Histophilus somni* – the more familiar name of *Haemophilus somnus* was changed recently. Travis Allen, a senior pre-veterinary student, is now in Dr. Mills' laboratory doing a survey of suspect cases with support from the laboratory and a small EPSCoR grant. Travis analyzed records from necropsies performed by Dr. Hunter in 2007. Focal cardiac lesions accounted for 33.0% and 42.5% of deaths, respectively. Travis is processing hearts submitted by Dr. Hunter from suspect cases on both properties. Of 13 sets of hearts and lung samples examined since October 2008, cardiac lesions were found in 8. Of the 8, *H. somni* was isolated from 4. We are implementing an immunohistochemical method to corroborate bacteriology findings, and to establish whether culture-negative hearts also contain *H. somni*. Probably all 8 are *H. somni*, since it can be difficult to isolate the organism from chronic and/or antibiotic-treated cases.

Feedlot veterinarians in western Canada have recognized *H. somni* myocarditis as an important cause of acute and chronic illness in feedlots since the late 1980s. Dr. Eugene Janzen at the WCVM reported it as a fairly common, readily overlooked lesion. There are few descriptions of it as a major problem in US feedlots or backgrounding operations. The disease has curious features. One is the relative rarity with which the organism is isolated from lungs in cattle with the cardiac histophilosis. If septicemia originates in a primary pulmonary infection, why is pneumonia absent and why can't we consistently isolate the organism from lung? In one large Canadian study, *H. somni* was identified in 70 hearts and in only 5 of the corresponding lungs. Another is the tendency for lesions to localize in papillary muscles of the left side of the heart – what is special about this area? Histologically, it is striking how intravascular bacterial colonies stick to, or be inside, cardiac endothelium. A third is the uncertainty that surrounds the effectiveness of

anti-histophilosis vaccinations to protect against cardiac forms of the disease.



Acute H. somni lesions in heart. The lesion in the image at top left has a classical localized dark lesion in one of two papillary muscles in left ventricular myocardium (arrowhead). The lesion in the image at top right has multiple white foci throughout all parts of the heart (arrowheads). In the micrograph at the bottom, bacterial colonies (dark structures) are disseminated throughout microvasculature of the heart.

Cardiac histophilosis tends to occur in animals on feed for 20 – 60 days. Illness and death generally occur after bouts of bad weather. Lungs in affected animals are congested and “not right”, but consolidation is generally absent. If you have an animal that has suggestive clinical signs and at necropsy you find wet, heavy non-consolidated lungs, incise the heart and look for lesions. Pay attention to the left ventricular myocardium. Acute lesions are often small (1 – 3 cm), purple and homogenous. Older lesions are fibrotic or contain pus. We would like to

increase the number of cardiac-origin isolates we have so we can share them with a bacteriologist who specializes in *H. somni*. She will compare them to pulmonary and cerebral isolates. If you prefer, submit fresh unincised hearts on ice packs from suspect cases.

Studies like these are useful to promising pre-veterinary students, since it beefs up their resume and exposes them to practical problems, and to faculty and staff at the WSVL since it gives us an extra pair of hands at the bench.

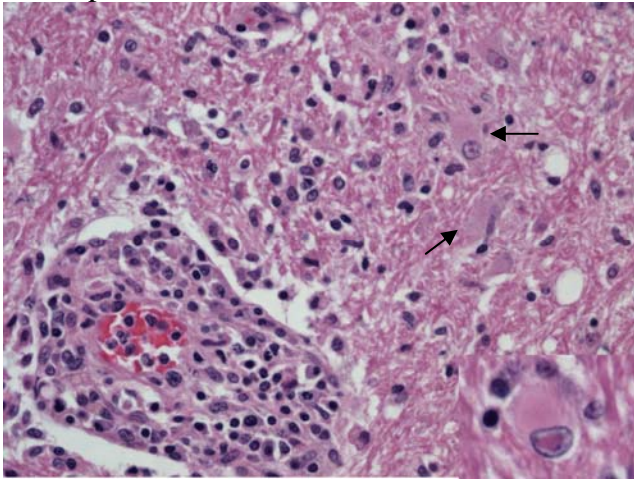
Donal O’Toole
Pathologist, WSVL
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Canine distemper in a 2-yr-old Border collie

We are all cognizant of diseases that can be transmitted between wildlife and domestic animals. Diseases such as rabies, brucellosis, plague, and tularemia are all too familiar. It doesn’t hurt to occasionally remind ourselves that there are a number of other diseases that can occur at the wildlife/domestic animal interface including some that can be prevented by routine vaccination.

We recently received the head from a male, 2-yr-old Border collie. Approximately one month following a fight with a badger, the Collie began showing neurological signs that included ataxia but no apparent aggression. Gross lesions were absent and rabies testing was negative. Microscopic examination of brain sections revealed a non-suppurative panencephalitis with intranuclear and cytoplasmic viral inclusion bodies consistent with canine distemper. Fluorescent antibody testing in the virology section of WSVL was positive for distemper. A variety of wild carnivorous species are naturally

susceptible to infection with the virus of canine distemper.



Perivascular cuffing and hypertrophied astrocytes (gemistocytes, arrows) in a 2-yr-old Border collie dog with canine distemper. The inset shows a gemistocyte with an intranuclear viral inclusion body.

Todd Cornish
Pathologist, WSVL
Don Montgomery
Pathologist and Director, WSVL

**FROM THE WYOMING DEPARTMENT
OF HEALTH**

**National Incident Management System
(NIMS)/
Incident Command System System
(ICS) Training**

Evidence of having completed NIMS/ICS training will likely be required in order for veterinarians to be allowed to assist with a State or Federal level animal related emergency response.

Developed by the United States Secretary of Homeland Security in 2004, NIMS outlines how emergency responders from government agencies and the private sector can work together under one system, using similar procedures and protocols, in responding to and recovering from all hazards.

A key component of NIMS is ICS. ICS is a management protocol originally designed for first response agencies and later federalized. ICS is divided into a five functional areas -- command, operations, planning, logistics, and finance/administration -- for management of all major incidents. ICS is based upon a flexible, scalable response organization providing a common framework within which people can work together effectively.

Evidence of having completed the following NIMS/ICS courses will allow Wyoming veterinarians to be eligible to assist in a large scale emergency response:

- IS-100.a- Introduction to Incident Command System
- ICS 200a-ICS for Single Resources and Initial Action Incidents
- IS-700.a -National Incident Management System (NIMS), an Introduction

These courses can be accessed on-line at: <https://wy.train.org>. Enter your sign on and password. First time users are requested to CREATE an account.

An alternate method is going online to FEMA/EMI at <https://www.training.fema.gov/IS/NIMS.asp>.

When you finish the course, print and save a copy of your certificate of completion.

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