Laboratory Services Division
Animal Health Laboratory
University of Guelph
Changing Lives Improving Life

AHL Newsletter

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Volume 17, Number 4, page 25 **December, 2013** ISSN 1481-7179

In this issue:

DSP– Disease Surveillance Plan, 2013-2018

The AHL has been funded by OMAF/MRA for a new 3-fold program:

1. Enhancing testing capabilities in Ontario
2. Enhancing disease surveillance in Ontario
3. Integrating with national surveillance - Linkage to the Canadian Animal Health Surveillance Network

In order to receive input from stakeholders, an initial planning meeting was held at the University of Guelph Arboretum on Sept 10, 2013. The Proceedings of the meeting are posted on the UofG-OMAF/MRA partnership website at: http://www.uoguelph.ca/omafra_partnership/en/partnershipprograms/DiseaseSurveillancePlanDSP.asp

We look forward to working with our partners in implementing this exciting new initiative. *AHL*

Change in AHL-Guelph Specimen Reception hours

We have modified AHL-Guelph specimen reception Monday-to-Friday operating hours to **8:00 AM to 6:00 PM** from the previous 8:15 AM to 7:00 PM. The specimen reception vestibule is open 24/7, with a refrigerator for submissions that need to be kept cool, a receptacle for slides at the side of the refrigerator (please don't refrigerate slides), and a drop-box for submissions not needing refrigeration. For postmortem specimens that will not reach the lab by 6:00 PM, there are instructions on the main door to contact the Animal Attendants at the Large Animal Clinic who will assist in unloading your submission. *AHL*

2013/14 AHL holiday hours

Date	Hours	Notes
Fri Dec 20, 2013	Guelph/Kemptville normal hours	Full staffing
Sat Dec 21	Guelph 9-5, Kemptville closed	Usual Saturday services
Sun Dec 22	Guelph 9-5, Kemptville closed	Usual Sunday services
Mon Dec 23	Guelph/Kemptville normal hours	Full staffing
Tues Dec 24	Guelph/Kemptville normal hours	Full staffing
Wed Dec 25	**Closed Christmas Day**	No service available
Thurs Dec 26	Guelph 9-5, Kemptville closed	Usual statutory holiday services
Fri Dec 27	Guelph 9-5, Kemptville 8:15-4:30	Open with limited staffing and testing
Sat Dec 28	Guelph 9-5, Kemptville closed	Usual Saturday services
Sun Dec 29	Guelph 9-5, Kemptville closed	Usual Sunday services
Mon Dec 30	Guelph 9-5, Kemptville 8:15-4:30	Open with limited staffing and testing
Tues Dec 31	Guelph 9-5, Kemptville 8:15-4:30	Open with limited staffing and testing
Wed Jan 1, 2014	Guelph 9-5, Kemptville closed	Usual statutory holiday services
Thurs Jan 2	Guelph/Kemptville normal hours	Full staffing
Fri Jan 3	Guelph/Kemptville normal hours	Full staffing

Guelph and Kemptville drop box and/or refrigerator are available 365/24/7 for specimen drop off.

Usual Saturday services include: specimen receiving, emergency mammalian necropsies, full bacteriology setup , as well as clinical pathology testing.

Usual Sunday services and statutory holiday services include: specimen receiving, emergency mammalian postmortems, and basic bacteriology setup. Please call the laboratory for "**limited staffing/testing**" details.

Selected 2013 AHL outreach activities

Boerlin P, **Brash M**. Food pad necrosis in mink. Ontario Fur Breeders Assoc Fall Field Day. North Am Fur Auction, Rexdale, ON. Oct 9, 2013.

Brash M Potpourri of diseases in broiler breeders. 39th Ann Mtg Can Assoc Vet Pathol, St-Hyacinthe, QC, May 26, 2013.

Brash M. Update on CgFARAD. OAPP. Guelph. June 20, 2013.

Brash M. An unusual case of necrotic enteritis in turkeys. 1st Ann WAPV Scientific Seminar. Banff, AB. Oct 1, 2013.

Brash M. Ontario Poultry Health Update. Poultry Producer Updates. Brodhagen, ON. Dec 11, 2013.

Brash M, Weaver B. DAGR 4220 Agriculture Diploma 2nd year class, 2011-2012 Ontario Poultry Health Update Ridgetown College, ON. Feb 5, 2013.

Cai H. Veterinary diagnosis in Canada using university/provincial lab as an example. China Inspection & Quarantine Bureau, Zhuhai Branch. May 15, 2013, Zhuhai, China (Invited seminar).

Chalmers G, McLean J, Hunter DB, **Brash M, Slavic D**, Boerlin P. Association between *Arcanobacterium phocae* and foot pad necrosis in farmed mink (*Neovison vison*). CRWAD, Chicago, IL. Dec 8-10, 2013. poster

Eidt J, MacDowall R, Cai HY. Rapid identification of veterinary mycoplasma using matrix-assisted laser desorption ionization-time-of-flight mass spectrometry. Intern Symp WAVLD. Berlin, Germany. June 5-8, 2013. poster

Hazlett MJ, Cai, H, Spinato MT, et al. The small ruminant abortion project. SRVO Fall CE Mtg, Nov 8, 2013, Cambridge, ON.

Hoff B. Toxicology review. 4th yr DVM, Guelph, Nov 20, 2013.

Martin E, Brash M, Hoyland S, Sandrock C, Ojkic D. Reovirus as an etiologic component of leg problems in Ontario broilers in 2012. AAAP, Chicago, IL, July 20-23, 2013. poster

Maxie G. Mock ACVP gross exam, 25 slides. AAVLD Ann Mtg. San Diego, CA. Oct 19, 2013.

Maxie G. Overview of AHL testing and consultative services. Livestock Research Innovation Corp. Delta Hotel, Guelph, ON. Oct 1, 2013.

Maxie G. DSP - Disease Surveillance Program planning. DSP Planning Workshop. Arboretum, U of Guelph. Sept 10, 2013.

Maxie G. 40+ years of veterinary pathology – Still seeking work-life balance! Canadian Animal Health Laboratorians Network (CAHLN-RCTLSA), St. Hyacinthe, QC. May 26, 2013.

Maxie G, Hazlett M, DeLay J. Quality assurance by and for veterinary pathologists. CAHLN, St. Hyacinthe, QC. May 27, 2013.

Maxie G, Fairles J. Overview of marketing efforts - Marketing the Animal Health Laboratory. Staying Alive Symposium. AAVLD Ann Mtg. San Diego, CA. Oct 17, 2013. Also presented to the Admin Mgmt Personnel Comm, Oct 19.

Maxie G, Spinato M. 2012 AHL annual pathology update. Can Assoc Vet Pathol - CAVP, St. Hyacinthe, QC. May 26, 2013.

Medeiros S, **Cai H**, De Lange CFM, Li J. Improving soybean meal nutrient value via fermentation using newly isolated bacteria. Mike Wilson Swine Research Day, 2013.

Menzies P, **McEwen B, Carman S**, Wootton S, Yates D, Jansen J. Detection of maedi visna virus infection in Ontario sheep flocks. Intern Sheep Vet Conf, Feb 18-22, 2013, Rotorua, NZ.

Ojkic D, Martin EAK, Brash M. Emergence of variant infectious bronchitis strain 4/91 in Ontario. 62nd Western Poultry Dis Conf, Sacramento, CA March 24-27, 2013.

Skelding A, **Brooks A, Stalker M**, et al. Hepatic alveolar echinococcosis in a dog in Ontario, Canada. In: Proc Ann Mtg Am Assoc Vet Parasitol, July 20-23, 2013, Chicago, IL..

Slavic D, Godkin A, **Fairles J**. Diagnostic bacteriology for in-clinic laboratories workshop. Guelph, April 23, 2013.

Spinato MT. OVC undergraduate seminars and labs "Diagnosis of food animal abortion and TSEs", Dec, 2013.

Turner PV, Sunohara-Neilson J, Nagy E, **Brash M**. Emerging enteric and respiratory disease risks in commercial meat rabbits. 2013 James Steele Conf Diseases in Nature. Houston, TX. June 19-21, 2013.

AHL Newsletter
December, 2013 - Volume 17, Number 4

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Editorial Assistants: **Helen Oliver, April Nejedly**

The *AHL Newsletter* is published quarterly (March, June, September, December) by the Animal Health Laboratory, Laboratory Services Division, University of Guelph.

Its mission is to inform AHL clients and partners about AHL current activities, and laboratory-based animal disease events and disease trends.

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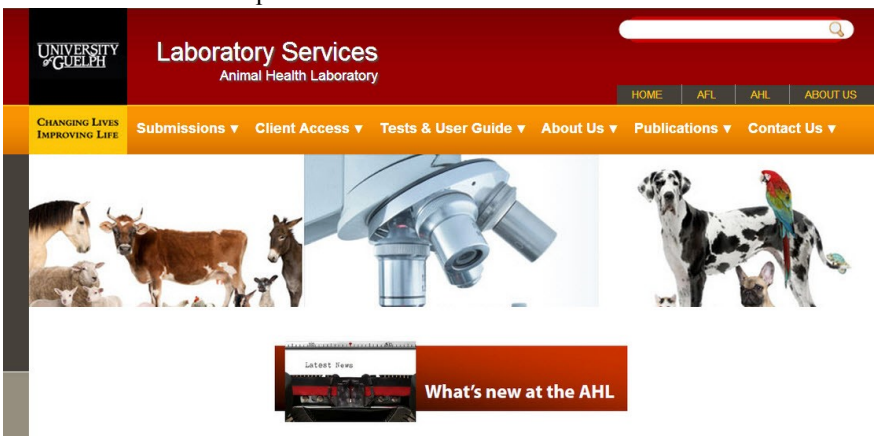
Our continued thanks to all of the non-author AHL clerical, technical, and professional staff who contribute to the generation of results reported in the AHL Newsletter.

- # We welcome your feedback! *Jim Fairles, Josie Given* ahlinfo@uoguelph.ca

We emailed our **biennial client survey** to 900 clients in November. 100 were returned, and **97% are satisfied with our service**. Here are a few of the survey responses that we will explore further:

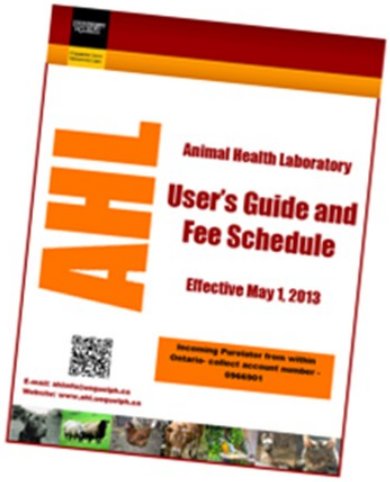
- 35% of respondents did not answer the question on are you happy with how we handle email enquiries. We aim to answer email queries within 24 hrs. How can we improve our ranking?
- Over 50% of clients are pleased with how our staff responds to telephone enquiries; we have recently updated our phone system and hope to increase this satisfaction!
- 48% of clients who answered the survey find our invoices easy to understand, but 17% did not answer this question. Is there information that should be included on the invoice that would help practitioners reconcile their cases?
- 40% of respondents did not answer our question about the usefulness of our communication methods - see below.
- 21% of respondents do not find our submission forms easy to complete, we are constantly looking to improve the functionality of our forms and welcome feedback and ideas from our clients! *AHL*

1. **Our new AHL website** - tabs across the header with drop-down menus for ease of use
   - "What's new" is now up-front and current



2. We "went green" with our quarterly **AHL Newsletter** - how many clients would still prefer a mailed/printed copy?

3. We print and mail an annual AHL **User's Guide and Fee Schedule**. Improvement feedback?



A brief emailed LimeSurvey will follow shortly! We value your feedback, and look forward to receiving your input

AHL Lab Reports

RUMINANTS

West Nile virus infection in 2 alpacas in eastern Ontario

Jan Shapiro, Andrew Brooks, Beverly McEwen

West Nile virus (WNV) is a flavivirus transmitted by bites of mosquitoes that have fed on birds carrying the virus. Now endemic in Ontario, horses in the province are routinely vaccinated against WNV.

Camelids are considered to be at low risk of developing clinical signs associated with WNV infection, and there are only a few reports of the disease in alpacas. **In 2012 and 2013, WNV infection was diagnosed in 2 alpacas with neurological signs submitted from different herds for postmortem examination to the AHL-Kemptville.**

The first case was a 5-year-old unvaccinated male alpaca submitted to the laboratory in early September 2012. The animal had a 4-day clinical history of acute onset of neurological signs, consisting of rapidly progressive weakness, ataxia and incoordination resulting in euthanasia on day 4 of illness. Gross postmortem lesions were restricted to the spinal cord, and consisted of multifocal 2-5 mm diameter areas of hemorrhage, most severe in grey matter, at T1-2 and L1-3. Histologically, significant lesions, restricted to the CNS, consisted of nonsuppurative encephalomyelitis with perivascular cuffing, and multifocal gliosis, and acute multifocal hemorrhage in the spinal cord. A real-time RT-polymerase chain reaction (rt-RT-PCR) test for WNV was performed at the AHL, and results were positive. PCR tests for Eastern equine encephalitis virus (EEEV) and Equid herpesvirus 1 (EHV-1), as well as tissue culture for rabies virus performed by the CFIA Ottawa Fallowfield Laboratory, were all negative.

The second case was an 11-year-old female alpaca with unknown WNV vaccination status, submitted for postmortem in mid-August 2013. The animal was one of several alpacas and llamas on the premises, but was the only one affected. It had a 1-day clinical history of acute onset of torticollis, ataxia, muscle tremors, confusion, visual disturbance and seizures, resulting in euthanasia. There were no postmortem lesions except for congestion of the cerebellar ependyma. Histologically, significant lesions were restricted to the CNS, and consisted of severe nonsuppurative generalized encephalomyelitis and mild nonsuppurative meningitis. Perivascular cuffing with mononuclear cells, focal gliosis, mild multifocal malacia, neuronal necrosis and satellitosis, and mild acute perivascular hemorrhage were observed in all levels of brain, and were most severe in brainstem. The rt-RT-PCR test for WNV was positive. PCR tests for Eastern equine encephalitis virus and tissue culture for rabies virus were negative.

There are only a few reports in the literature of clinical disease caused by WNV infection in alpacas.

- Disease is reported in alpacas as young as 3 months of age, and often only a single animal in a herd is affected.
- **The neurological signs are usually acute onset and rapidly progressive**, and may include lethargy, depression, anorexia, torticollis, head tremors, ataxia, stiff gait, altered mental status and hyperesthesia.
- **Most cases die in spite of aggressive treatment,** which is directed at reducing CNS inflammation and supportive care, but outcomes may reflect the stage of disease at which treatment was initiated.

In Ontario, other infectious disease differential diagnoses in alpacas may include EHV-1, rabies, listeriosis, meningeal worm, mycotic or bacterial meningitis, or brain abscess. **A search of AHL records from July 17, 2013 to October 24 showed that the only non-avian positive WNV cases were in 4 equine submissions diagnosed serologically, and in alpacas.**

WNV infection is immediately notifiable to CFIA and OMAF. *AHL*

Ovine nasal adenocarcinoma *Maria Spinato*

A 2-year-old ewe developed dyspnea and a clear nasal discharge that progressed to severe respiratory distress. Over the past 5 years, 1-2 sheep per year have developed similar clinical signs in this flock. Affected animals eventually become anorexic and die within 2 months. Only sheep older than 5 years of age were initially affected; recently**, sheep as young as 1-2 years of age have also developed this condition**. Upon sectioning the skull, a 6 x 7 cm multilobulated granular red-brown mass was found, extending from the cribriform plate of the ethmoid bone and filled the caudal nasal cavity. The ethmoid turbinates were partially effaced, and there was focal osteolysis and distortion of the cribriform plate and overlying frontal bone. Abundant mucoid fluid was present in the nasal cavity.

Enzootic nasal tumors in sheep and goats are caused by an **oncogenic betaretrovirus, enzootic nasal tumor virus (ENTV)**, and are therefore contagious for other sheep in the flock. The tumors are locally invasive; metastasis is not reported. Affected animals eventually die of emaciation and respiratory distress. *AHL*

Salmonella Dublin testing *Durda Slavic*

In December 2012, the AHL reported the first case of *Salmonella* Dublin in Ontario. This organism was isolated together with other respiratory pathogens from a 4-5 month-old Holstein bull calf showing signs of respiratory disease 3 weeks after arrival in a feed lot.

S. Dublin is a host-adapted *Salmonella* of cattle, affecting animals of all ages, but it is usually more severe in younger, immunologically 'naive' animals. Calves can be infected at calving but do not necessarily show any clinical signs until they are 2-3 weeks old. Clinically, calves may become anorexic with fever and diarrhea with or without the presence of blood. More frequently however, *S.* Dublin in calves will cause septicemia and/or pneumonia in the absence of any enteric clinical signs. In adult animals, *S.* Dublin disease is clinically milder, but diarrhea, abortions, and respiratory disease have been reported. Affected adults become carriers and a potential source of infection to the rest of the herd by actively shedding the bacteria for months after the initial infection.

Although *S.* Dublin has been causing problems in cattle in the northeastern United States for years, it does not appear to be widespread in Ontario. Since our first isolation of this organism, we have screened all bovine lungs for the presence of *S.* Dublin and so far we did not have any positives. One should be aware, however, that fecal samples submitted to AHL are not routinely screened for *S.* Dublin.

If *S.* Dublin is suspected, this must be specified in the clinical history. This information is particularly important when submitting feces, since **the plating media that we use for our routine fecal culture will not support growth of *S.* Dublin**. *AHL*

Reference

McDonough PL, Fogelman D, Shin SJ, Brunner MA, et al. *Salmonella enterica* serotype Dublin infection: an emerging infectious disease for the Northeastern United States. J Clin Microbiol 1999;37:2418-2427.

AHL-Guelph Specimen Reception phone update *Jim Fairles*

We have instituted a new phone system in Specimen Reception to better deal with the volume of calls that we receive. Our main University of Guelph extension continues to be 519-824-4120 **extension 54530**. If you are using any other extensions to reach the front end staff, you will receive a message to use 54530.

This is NOT a phone tree and we still have our usual core staff answering the telephone. If we are all busy, then you will be placed in a **telephone queue** indicating an approximate wait time. At any time you may leave a message by dialing 1 from a touch-tone phone. We check messages frequently and will return your call as soon as possible.

To be most efficient, we recommend email communication – all of our group lab emails are monitored continuously and we can respond in a timely manner. This provides us with a documentable written record and a more efficient way to provide the information you are seeking.

Please advise us if you encounter any problems as we make this transition. *AHL*

SWINE

Mycoplasma hyosynoviae and *Mycoplasma hyorhinis* PCR testing offered at the AHL *Jim Fairles, Pat Bell-Rogers, Jason Eidt, Rebeccah McDowall, Hugh Cai*

The AHL has completed the analytical validation of *M. hyosynoviae* and *M. hyorhinis* PCR with pure cultures of *Mycoplasma* species and limited number of field samples. For a limited period of time, the tests will be complimentary for the samples submitted for workups of swine lameness where mycoplasma culture is indicated. Please submit joint fluid or swab in saline or PBS (without jello) from acutely affected pigs with sign of arthritis. Samples without prior antibiotic treatment are preferred.

M. hyosynoviae can cause polyarthritis, and *M. hyorhinis* causes polyserositis. Recently, practitioners in North America have recommended increasing awareness of infection by these 2 pathogens. The AHL has provided isolation services for *M. hyosynoviae* and *M. hyorhinis* for over 3 decades. These added PCR tests will shorten the time to results and provide additional tools for the detection of the pathogens. Confirmation of *Mycoplasma*-associated arthritis requires detection of the pathogen in affected joints plus characteristic microscopic lesions in synovial tissue. Direct PCR of *M. hyorhinis* in synovial fluid samples is significantly more sensitive than culture.

Reference

Gomes Neto JC, et al. *Mycoplasma*-associated arthritis: Critical points for diagnosis. JSHP, March and April, 2012.

Makhanon M, et al. Comparison of detection procedures of *Mycoplasma hyopneumoniae, Mycoplasma hyosynoviae,* and *Mycoplasma hyorhinis* in lungs, tonsils, and synovial fluid of slaughtered pigs and their distributions in Thailand. Trop Anim Health Prod . 2012;44:313-318.

AVIAN/FUR/EXOTIC SPECIES

Marked hepatic lipidosis in melatonin-implanted adult female mink

Marina Brash, Megan MacAlpine, Hugh Hildebrandt

In early September, 2013, an Ontario producer with a mink farm housing 8500 adult mink, noted 12 dead 2-year-old females individually caged, in 1 row. Selected young female and male mink, and approximately 400 mature female mink, had been implanted with melatonin (Prime-X, Neodynamics, LLP , Lake Delton, WI) 1 month previous. In late July, all the adults on this farm had been re-vaccinated with a 3-way combination vaccine containing killed mink enteritis virus, *Clostridium botulinum* type C bacterin-toxoid and *Pseudomonas aeruginosa* bacterin (Biocom-P; United Vaccines Inc, Madison, WI) and a single vaccine containing modified-live canine distemper virus (Distemink; United Vaccines Inc, Madison, WI). Mink received a commercially prepared wet feed delivered fresh daily.

Eleven dead pelted female mink were received for post-mortem examination at the AHL. All mink had similar findings and were in good body condition, with ample external and internal fat stores. The livers were markedly enlarged, yellow/orange (Figure 1) with rounding of the margins, and sections of liver floated in formalin. Spleens were small and kidneys were pale, with mild cortical pitting. Most of the mink had variable amounts of dark brown-black tarry fluid consistent with digested blood in their stomachs and small intestines. Lungs were atelectatic, soft and mottled purple/red/pink.

Tentative diagnoses included marked hepatic lipidosis (fatty liver), renal lipidosis, and acute gastric and intestinal hemorrhage; further testing including routine histology and serology for Aleutian disease.

Histologic evaluation of liver and kidney confirmed the diagnosis of marked diffuse hepatic and moderate renal lipidosis (Figures 2A & 2B). All 11 mink tested negative serologically for Aleutian disease virus.

Follow-up conversations with a private practitioner experienced in management and diseases of farmed mink indicated hepatic lipidosis is identified commonly in implanted mink when they begin to "fur out". Several recommendations were provided to the mink farmer, and those carried out included addition of choline chloride (60% choline chloride-dry; Blachem Corporation, New Hampton, NY) to the ration and provision of 3, 0.5 mL subcutaneous injections of Vitamin B(Vitamaster–NF;Vétoquinol Canada Inc, Lavaltrie, Quebec), 1 day apart to the implanted mink. Clinical response was rapid; shortly after the first injection of vitamin B, the implanted mink began to eat again and the mortality subsided. Approximately 25 mature females from the single row died. The young implanted females and males were not affected. Other suggestions for implementation in future years include changing the diet of the implanted mink away from an energy ration to a diet higher in protein, or limit feeding to avoid excess body fat deposition.

In this case, all mink had dark brown-black tarry fluid in their GI tracts. In one of the authors' experience (HH), **acute hemorrhage is a common finding in mink with severe hepatic lipidosis**. Clinically, mink can be presented with hemoptysis and postmortem findings include mesenteric hematomas and presence of free blood in the GI tract or in thoracic and abdominal cavities. The acute terminal hemorrhage is thought to be associated with hepatic dysfunction and decreased production of clotting factors.

Melatonin implants are a tool used by many mink farmers in order to advance the process of priming, encouraging the growth of the winter pelage. This is advantageous because the pelting season can commence earlier, extending the season and spreading out the workload. In addition, in some regions in Canada, the cold weather settles in earlier in the fall and even in farms with good nutrition, can have a negative impact on the mink's body weight and pelt size, demonstrating another advantage of earlier pelting.

AHL

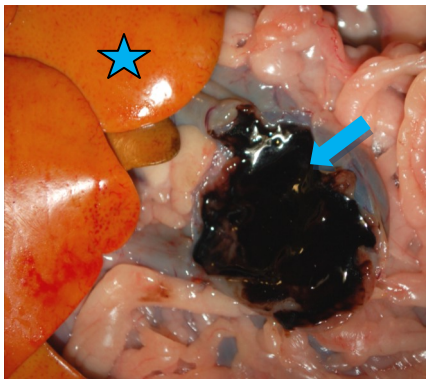


Figure 1: Marked hepatic lipidosis with yellow/orange discoloration and rounding of the liver margins (blue star). Stomach is open and contains brown-black tarry fluid typical of gastric hemorrhage (blue arrow). The small intestine contained similar content.

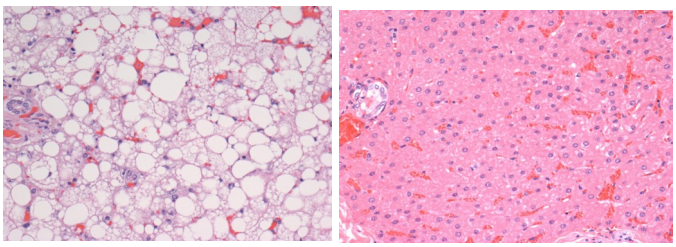


Figure 2A, left: Fatty liver: Hepatocytes generally are swollen, distorted and contain variably-sized lipid droplets. At postmortem, sections of liver floated when placed in formalin. This is because the lipid has reduced the overall density of the liver. Compare with normal mink liver Fig 2B. 200X H & E

Figure 2B, right: Normal mink liver 200X H & E

HORSES

Postmortems of horses with neurologic signs

Murray Hazlett, Maria Spinato

Often the clinical signs and history in equine neurologic disease submissions are non-specific, and zoonotic diseases such as rabies, eastern equine encephalitis, and West Nile fever must be considered. To protect pathologists and PM technicians who open the body and remove brain and spinal cord from contracting these zoonotic infections, work is conducted in one of our enhanced containment level 2 labs (CL2+) (Figure 1), using PAPRs (Figure 2) and other protective equipment. An complete autopsy of a full-sized horse will require 2-3 hrs, especially if the spinal cord needs to be sampled. Although we prefer our samples to be as fresh as possible, sometimes the animal must be left for the next day depending on when the horse arrives, and the backlog of cases for the isolation room.

If the pathologist is confident that the case is not a zoonotic disease, based on vaccination status, duration of illness, clinical signs and other history, much time and money can be saved. When a case is sent for a rabies test, all other testing, such as bacteriology, virology, PCR, etc., is placed on hold. Formalin inactivates viruses, so histology specimens can be processed. Power tools cannot be used in rabies-suspect cases because of the danger of aerosolization, and brain as well as spinal cord samples must be removed manually.

Histology - Rabies-suspect brains must be fixed for at least 2 days before being trimmed. If there are no lesions in routine sections of brain and cord, or lesions do not explain the clinical signs, both brain and cord are sectioned transversely through their entire length to look for suspicious areas and take more histology sections. Horses have a large brain, and, including routine examination of visceral organs, often 20 or more slides will be prepared on these cases. If spinal cord is examined, the number of slides can reach 30 or more. Premortem localization of lesions helps us reduce the expense of preparation and reading of this many slides.

How you can help?

- Let us know if you suspect spinal cord disease, and we will try to remove some cord at postmortem using hand-tools (Figures 2 and 3). Otherwise, the body is held until the initial histology and rabies check, and then the (now autolysed) spinal cord will be removed using power saws.
- Provide full vaccination history, as well as clinical signs (including when they started). Other animals affected?
- If it is an insurance or litigation case, the animal needs to be photographed and described before the postmortem proceeds – please let us know. *AHL*

Figure 1. Large animal enhanced containment level 2 (CL2+) lab.

Figure 2. Powered air purifying respirator (**PAPR**) worn by staff during the PM. HEPA-filtered air passes over the face of the operator.

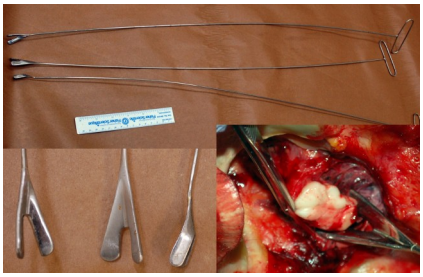


Figure 3. Spinal cord removal tools, used to cut nerve roots and separate cord from dura.

The AHL has reinstituted PHF PCR testing

Rebeccah McDowall, Hugh Cai

Ten years ago, due to lack of requests, we discontinued our PCR test for the detection of *Neorickettsia risticii*, the cause of Potomac horse fever (PHF).

In the summer of 2013, the Ontario Ministry of Agriculture and Food (OMAF) announced 2 cases of PHF in Ontario and recommended that veterinarians include PHF in their list of rule-outs when examining horses that are anorexic and febrile during the summer and fall. We have therefore reinstituted our real-time PCR test as previously validated.

Our bench validation with DNA of pure culture *N. risticii* and other bacterial species, and a limited number of clinical samples, has shown that the **assay is specific and sensitive.**

Please submit EDTA blood samples from live horses, or lung, liver and spleen from postmortem horses.

The fee for this PCR test is **$34 per sample**. *AHL*

COMPANION ANIMALS

Acetaminophen poisoning in 3 cats

Brent Hoff, Josepha DeLay, Andrew Moore, Nick Schrier

Three mature cats from the same household developed acute onset, rapidly progressive neurologic signs and / or vomiting within 4 hrs of ingesting kibble treats. The treats originated from a single package the owner obtained from an unknown individual at a community event. The treats were not in an original container, and the packaging was not sealed. One cat died approximately 9 hrs after ingesting the treats. The other 2 cats were examined by a veterinarian and demonstrated alternating episodes of loud vocalization and severe depression. Hypothermia, bradycardia, blue mucous membranes, and paw and facial edema were also identified. Both cats were euthanized due to the severity and progression of clinical signs, and black discoloration of blood was noted during intravenous injection.

The 3 cats and a sample of the kibble treats were submitted to the AHL for postmortem examination and toxicologic analysis. The treats were coated with white powder-like debris that was distributed fairly evenly on both sides of the kibble but did not extend into the core (Figure 1). Microscopically, the powder was crystalline and mixed with oil. Scanning electron microscopy (SEM) confirmed that the crystals were composed of carbon and oxygen with a small amount of sodium, phosphorus, nitrogen, chloride and potassium. Fourier transform infrared (FTIR) spectroscopy analysis identified the crystalline debris as acetaminophen (Figure 2), and FTIR of various sites on and within the kibble confirmed presence of acetaminophen on the surface of the treats only. No acetaminophen crystals could be found inside the kibble, indicating it was likely contaminated with powdered acetaminophen after production.

On postmortem examination, no significant gross or histologic lesions were evident in any of the 3 cats. Toxicologic analysis by high-performance liquid chromatography (HPLC) identified acetaminophen-protein adducts in liver from all 3 cats, confirming exposure of each animal to the drug. Quantification identified the highest levels of acetaminophen-protein adducts in liver from the cat that died, in comparison with levels in housemates that were euthanized. **In combination with the clinical history, clinical signs, and confirmation of acetaminophen presence on the remaining kibble treats, these results supported a diagnosis of acetaminophen toxicosis in each of the 3 animals from the household**.

Acetaminophen has a narrow margin of safety in both dogs and cats, however cats are especially sensitive to its toxic effects due to inherent deficiency of glucuronyl transferase in this species, which adversely affects drug metabolism. **Acetaminophen toxicosis can result in methemoglobinemia and hepatotoxicity in both species**, although methemoglobinemia is a more consistent feature of the toxicosis in cats. Associated clinical signs include respiratory distress, lethargy, brown mucous membranes, icterus, and vomiting. In cats, facial and paw edema is also common, although the exact mechanism of this clinical feature is unknown. Interestingly, acetaminophen hypersensitivity in people causes similar swelling of the face and distal extremities. *AHL*

Figure 1. Kibble treat fed to cats prior to onset of clinical signs. Note white powder-like debris covering surface.

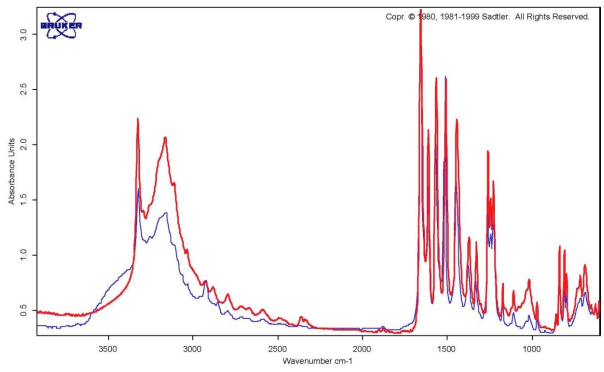


Figure 2. Fourier transform infrared (FTIR) spectra of white crystalline debris on kibble treat surface.
Red = test material. Blue = reference acetaminophen.

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