

Diagnostic Forum

A Quarterly Newsletter from the Indiana Animal Disease Diagnostic Laboratory at Purdue University

VOL 22 NO 3

SUMMER 2012

Inside the Forum

New PRRS Test	P.1
Coliform Mastitis in Dairy Cows	P.1
<i>Mycoplasma gallisepticum</i> infection of backyard and commercial poultry operations	P.2
Focus on Graduate Students	P.2
Diagnostic Profiles	P.3
Sudden Death in Dogs	P.3
Reporting options, UPS, ADDL calendar	P.4

From the Director

Stephen B. Hooser

The Great Drought and Heat Wave of 2012 are severely damaging crops and forages throughout Indiana. Not only are ponds and creeks drying up, but pastures are turning brown as well. In many fields, the only green plants are noxious weeds. This spring and summer have seen a bumper crop of Poison Hemlock growing along roadsides, in ditches and in some grazing areas. As a consequence, the ADDL has had increased reports of livestock exposed to, and poisoned from eating poison hemlock plants because there was little else to eat.

In addition, the severe drought has made conditions right for increased uptake of nitrates into cornstalks. Before using cornstalks as forage, consider the possibility of toxic levels of nitrate in them and have a representative sample tested for nitrates before using.

A description of poison hemlock can be found at [Indiana Plants Poisonous to Livestock and Pets](http://www.in.gov/plants/poisonous-to-livestock-and-pets/):

<http://vet.vet.purdue.edu/toxic/cover1.htm>.



Poison Hemlock
(*Canium maculatum*)



New PRRSV Test on Oral Fluids

Dr. Roman Pogranichniy announces a new ELISA test for PRRSV. The PRRSV test from IDEXX (HerdCheck* PRRS X3 Antibody ELISA) on oral fluids will be offered beginning May 1, 2012.

The cost is \$5.00/test. If more than 45 samples are submitted per accession, the cost will be \$4.50/sample.

Guidelines for sample collection and submission can be found on our website at www.addl.purdue.edu

A video on oral fluids collection can be found at www.cfsph.iastate.edu/video.php?link=oral-fluid-collection-in-pigs



1.

Coliform Mastitis in Dairy Cows

By Amy Nooyen, Class of 2013
Edited by Dr. Peg Miller, ADDL Pathologist



Abstract

Coliform mastitis pathogens are ubiquitous in the environment and can produce a fatal mastitis in dairy cows on well managed farms. Mainly affecting multiparous cows near parturition or during the dry-off period, coliform bacteria typically cause infection when the teat canal is most vulnerable to invasion and the cow is immune-compromised. When coliform bacteria enter the teat canal of susceptible cows, rapid proliferation occurs along with release of endotoxins that produce the primary mammary and systemic injury. The changes in vascular permeability and an influx of leukocytes results in the rapid development of edema and hemorrhage in the teat and lactiferous sinuses, which appears as dramatic swelling of the udder with serosanguinous secretions. An overwhelming endotoxemia may also cause pyrexia, tachycardia, shock and death within days of bacterial invasion. Gross lesions of coliform infections typically include marked edema, hemorrhage, and necrosis of sinuses and ducts with sequestration of affected mammary tissues. Histologically, hemorrhage and edema are present with destruction of interlobular ducts and leukocytic infiltration. Treatment must be focused on preventing endotoxic shock. The ubiquity of the bacteria makes herd control of coliform mastitis difficult, but it may be minimized through stringent hygiene practices, regular milking maintenance, dry cow therapy, and vaccination.

The entire article, with references, can be found on our website or mailed/faxed to you at your request.



Swollen infraorbital sinus of a turkey with *Mycoplasma gallisepticum*

***Mycoplasma gallisepticum* infection of Backyard and Commercial Poultry Operations**

by Dr. Daniel Wilson

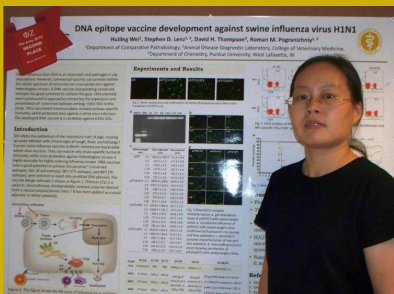
Edited by Dr. Pat Wakenell

Abstract: *Mycoplasma gallisepticum* (MG) is an important disease of backyard and commercial poultry flocks in Indiana and the US. As a target disease of the National Poultry Improvement Plan (NPIP) the incidence of MG has been greatly reduced over the last 50 years; however, the disease still has a continuing significance. MG is the causative agent of Chronic Respiratory Disease of chickens and Infectious Sinusitis of turkeys, both of which can result in varying rates of morbidity and mortality. An increasing number of mycoplasmosis cases in backyard flocks has been identified as backyard flock ownership has increased and

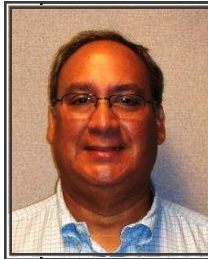
owners of these flocks continue to trade birds at "swap meets" and through online trading websites. Treatment of MG positive flocks with antibiotics is neither feasible nor successful. If deemed necessary, depopulation of backyard flocks as a result of clinical mycoplasmosis can be emotional and detrimental to flock owners. Mycoplasmosis carries significant economic importance to commercial poultry operations through death loss, condemnations, and reduced egg production. Prevention of MG in both backyard and commercial flocks is achievable by appropriate biosecurity methods and surveillance programs such as the NPIP. Subsidized testing for MG and other avian

diseases is available through the Indiana State Poultry Association T-12 program. After requesting paperwork from ispa@purdue.edu owners may submit one dozen eggs to the Purdue Animal Disease Diagnostic Lab and receive free test results. In addition to surveillance testing, education of backyard owners concerning biosecurity is essential to prevent mycoplasmosis and other infectious diseases of poultry.

The entire article can be found at www.addl.purdue.edu or can be mailed/faxed to you upon request.

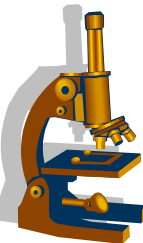


Our congratulations to Hueling Wei, Graduate Student of Dr. Roman Pogranichniy, ADDL's Head of Virology and Serology, was awarded 2nd place at the Purdue College of Veterinary Medicine Phi Zeta Research Day scientific session for her poster "DNA epitope vaccine development against swine influenza virus H1N1."



ADDL Welcomes Our New Quality Manager

Lou Samudio joined the ADDL staff in June, 2012 as its quality manager. He comes with an extensive background in Quality Assurance/Quality Control. Lou has a BS in Business –Operations and Systems Management from Indiana University and is a Certified Quality Engineer (CFE). He was most recently Quality Manager at the Indiana State Chemist's office at Purdue.



Focus on...Anatomic Pathology Graduate Students

In addition to the coursework and teaching responsibilities, anatomic pathology residents perform necropsies, coordinate attendant laboratory results, and communicate with veterinarians.

Upon completion of this three-year program, they are eligible to take the American College of Veterinary Pathologists Certifying Board Examination.

From left to right (upper photo)
Dr. Virginia Reynolds, Texas A and M
Dr. Katie Horzmann, University of Missouri
Dr. Laura Baseler, Iowa State University
Dr. Munhee Kim,
Dr. Erica Twitchell, Purdue University
Dr. Nozomi Shimonohara, Kitasato University, Japan

New Graduate students (bottom photo) Drs. Mark Robarge (Purdue University) and Meaghan Broman (University of Wisconsin) joined the ADDL staff on July 1, 2012.



Sudden Death in Dogs

By Dr. Bill Wigle, ADDL Pathologist

It is not uncommon that a dog with a history of sudden death is presented to ADDL for postmortem examination. A study in Canada reviewed laboratory findings over a ten year period and tabulated the most common causes of sudden unexpected death in dogs. A review of ADDL records was performed to determine if similar factors were involved in cases of sudden death in dogs that were submitted to this laboratory.

Records of canine necropsies performed at Purdue ADDL from January 1, 2007 through May 31, 2012, were reviewed. Over this period, a total of 1346 canine necropsy examinations were performed. Of these, 112 cases (8.3%) had a history of sudden death in which the animal was found dead, collapsed suddenly or was in a moribund state when found and died prior to receiving veterinary care. None of these dogs had a clinical history of ongoing disease at the time of death.



The dogs ranged in age from 4 weeks to 14 years. The cardiovascular system was the most common system involved in sudden death cases. A total of 35 dogs (31%) had lesions suggesting that cardiovascular disease was the cause of sudden death. Lesions of myocardial degeneration, necrosis, hypertrophy, fibrosis or cardiac vascular disease were found in 11 dogs with an average age of 6.2 years. Seven dogs had hemangiosarcomas in the right atrium. Other cardiac neoplasms included two chemodectomas, a case of lymphosarcoma, a hematoma and an unidentified round cell tumor. The average age of dogs with cardiac neoplasia was 8.1 years. Seven dogs were diagnosed with cardiomyopathy. Average age of dogs with cardiomyopathy was 1.9 years. Two dogs had aortic stenosis and their average age was 7 months. Two cases of mitral valve degeneration were diagnosed in dogs aged 3 and 9 years. There were single cases of

aortic rupture, heartworm disease and myocarditis.

Gastrointestinal disease accounted for the cause of sudden death in 22 dogs (19.6%). Nine dogs had gastric dilatation and volvulus (GDV) and two others had marked gastric dilation. Average age was 5.2 years for this group but one dog with GDV was only 4 months old. Five dogs died acutely from parvoviral enteritis without showing clinical signs. These dogs averaged about 7 months of age. Intestinal volvulus was observed in 4 dogs with an average age of 3 years. Single cases of gastric infarct and intestinal foreign body were observed.



There were nine cases where trauma was determined to be the cause of death. The traumatic incident was not observed by the owners in any of these cases.

Although poisoning is often suspected in cases of "sudden death", only 6 cases had chemical evidence supporting exposure to toxins. There were two cases of organophosphate exposure, two of ethylene glycol and one each of chocolate and diphacinone rodenticide poisoning.

Only five cases of sudden death were attributed to respiratory disease. Single cases of bacterial pneumonias were caused by *Bordetella* sp. and *Pasteurella* sp. and two cases were caused by *Streptococcus* sp. A single case of chylothorax was also diagnosed.

Three cases involving the central nervous system included individual instances of encephalitis, nonsuppurative meningoencephalitis and hydrocephalus. Three young dogs ranging in age from 6 weeks to 3.5 months of age died of food aspiration and asphyxiation. Two cases of sudden death involved the urinary system and included individual cases of pyelonephritis and urethral obstruction. Two dogs with sudden death involved neoplasms other than in the heart. One had metastatic osteosarcoma and one had a splenic hemangiosarcoma that ruptured resulting in hemoabdomen. Individual cases of hemothorax, hemoabdomen and severe pulmonary hemorrhage were diagnosed. No underlying cause of the hemorrhage was determined in these cases. A single case of acute pancreatic necrosis causing sudden death was diagnosed over the study period.

There were 21 (21.5%) cases in which no cause of sudden death could be determined from the necropsy findings or additional laboratory testing.

Findings were in general agreement with the Canadian study. They found cardiovascular disease to be the most common cause of sudden death followed by toxicity, gastrointestinal disease, trauma and non-traumatic hemorrhage with incidences of 21.9, 16.6, 12.6 and 6.6% respectively.

Reference: Olsen TF and Allen AL: 2000. Causes of sudden and unexpected death in dogs: A 10-year retrospective study. *Can Vet J* 41:873-875.

Purdue ADDL and Heeke ADDL will be closed on the following University holidays in 2012.

July 4.....Independence Day
September 3.....Labor Day
November 22-23.....Thanksgiving
December 24-25.....Christmas

ADDL Lab Results are available by

- Email (call ADDL with your email address)
- Fax
- Internet/Web

Lab results are available on the Internet. Call to set up an account or go to our web page, then

1. Click on Online Reports Tab
2. Click on Request Info and follow instructions.

Reduced UPS shipping rates for ADDL Clients

- ADDL has reached an agreement with UPS for submitters to send samples to the West Lafayette Lab at a reduced rate using its Authorized Return Service. Packages will arrive at ADDL the following morning.
- Pre-addressed labels will be provided to you by ADDL
- Submitter will be billed \$7.00 per package (up to 15 pounds).
- Call us at 765-494-7440 or visit our website to request labels
- If multiple cases are submitted in a single shipment, the UPS charge will be added to one case.

If you are currently using our histopathology mailers (via U.S. mail) and would prefer taking advantage of the UPS option with its guaranteed delivery time, we will provide you the formalin-filled containers without an address label at \$15./box of 12.

GlobalVetLink is available for electronically requesting and reporting Coggins tests (Equine Infectious Anemia). Both ELISA and AGID testing is available at \$8.50/test with no accession fee. In order to have access to a GlobalVetLink account, contact the company directly at www.globalvetlink.com or phone 515-296-0860.

Non-Profit Organization
U.S. Postage PAID
PURDUE UNIVERSITY

ANIMAL DISEASE DIAGNOSTIC LABORATORY
406 S. UNIVERSITY
WEST LAFAYETTE, IN 47907