

## Tularemia: A recent case and important reminder

By: Carl Johnson, President & CEO, PDS and Lorraine Bryan, Veterinary Pathologist, CWHC

In May 2017, a debilitated White-tailed Jackrabbit that was found in a local Saskatoon park presented to the Veterinary Medical Centre (VMC-WCVM) for an inability to ambulate. A musculoskeletal injury was suspected but survey radiography did not reveal any abnormalities although some bruising was present on the medial aspect of the hind limbs. Pain medication was administered but the jackrabbit's condition quickly worsened overnight and a decision to euthanize was made the next day. The jackrabbit was submitted for postmortem examination. Gross examination revealed hemorrhage in the respiratory tract which was suggestive of septicemia. Gross examination of the musculoskeletal and nervous systems did not support trauma. Histopathologic examination revealed necrotic foci in the liver (see Figure 1), spleen and adrenal glands and diffuse congestion and edema in the trachea and lungs. **The histopathologic lesions observed combined with a positive culture of *Francisella tularensis* yielded a presumptive diagnosis of Tularemia.** Further testing conducted by the Public Health Agency Canada, National Microbiology Laboratory in Winnipeg, confirmed the presence of *F. tularensis* type B in the jackrabbit.

I hope by now this case has caught your attention as there are several aspects of this case worth noting. First, while CWHC



pathologists see this disease on an almost annual basis in rural and wilderness settings, tularemia has been rarely encountered in an urban environment. Second, *F. tularensis* type B subspecies is more commonly seen in aquatic rodents in North America (beaver, muskrat) and northern Eurasian hares and small rodents; whereas type A is most often seen in lagomorphs (hares, rabbits, pikas) in North America. Pathogenicity of type B is generally less severe than type A, which is highly virulent in humans and domestic rabbits. Third, there was apparent staff exposure during the necropsy procedure that led to a subsequent illness, presumably caused by *F. tularensis* type B (the convalescent titer is pending). Quick and effective

communication from Dr. Bryan to PDS staff members, based on the necropsy and histopathologic findings, and rapid action

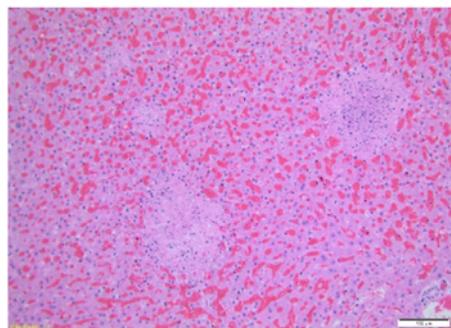


Fig 1: Multifocal liver necrosis in jackrabbit infected with *Francisella tularensis*

on the part of the exposed technician to seek treatment has averted any unfortunate human consequence.

Tularemia is spread primarily by arthropod and biting fly vectors, although water-borne

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infection is possible. Host reservoirs include aquatic rodents and terrestrial rodents, rabbits and hares. The public health significance of tularemia will increase as exposure mounts, with ticks and host reservoirs expanding their range and increasing contact with humans occurs.

**While tularemia is endemic in certain wildlife species, it is a notifiable disease in humans.**

Signs are variable in humans and clinical manifestations reflect the site of infection and the subspecies type, and symptoms usually become apparent in 3-5 days. It is interesting to note that *F. tularensis* is considered by the Centers for Disease Control and Prevention (CDC) as a viable biological warfare agent on the basis it is easily aerosolized, highly infective, non-persistent and easily decontaminated, and highly incapacitating for the infected individual yet rarely lethal. It is not a stretch to translate this threat to the veterinary clinic and diagnostic lab settings.

As veterinarians are often on the receiving end of a well-in-

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mentioned request to care for a sick rabbit, squirrel, or other potential carrier of a zoonotic disease, it is in everyone's best interest to follow prudent guidelines for managing such cases to reduce exposure. In the veterinary diagnostic laboratory, we have formal procedures to follow, protective clothing, gloves and masks to wear, and carcass and tissue disposal procedures which are designed to protect humans. That said no procedure is

foolproof. It's always sound practice to learn from mistakes, continuously improve our processes and refresh our training. Fast and effective communication is critically important, and ensuring anyone in contact with a suspect zoonotic case is informed and directed to their physician for guidance. Furthermore, it's important to report a zoonotic diagnosis to Public Health officials when there has been direct human exposure. As of this writing, CWHC

and PDS have confirmed a second case of tularemia in an American Red Squirrel, found "injured" on a public golf course within the city limits of Saskatoon. Similar to the case described above, this squirrel presented with apparent trau-

ma by a well-meaning citizen. What will you do in your practice when an "injured" small rodent or rabbit enters your reception, or you have a possible zoonotic disease on your list of differential diagnoses when working up a case?

FOR MORE ON THESE CASES  
FROM THE CWHC, SEE:

<http://blog.healthywildlife.ca/tularemia-diagnoses-urban-parks-saskatoon-saskatchewan-canada/>

## BSE sample collection – collecting samples “in-clinic”

By: Wendy Wilkins, Disease Surveillance Veterinarian, Ministry of Agriculture

### If your clients could bring the animal's head to the clinic, would this make collection of samples for BSE testing simpler for you?

The Canadian Food Inspection Agency (CFIA) allows producers to bring bovine heads to veterinary clinics for sampling. There are certain conditions that must be met, but overall this should make it more convenient and less time consuming to get that sample submitted. Producers still receive \$75 payment and veterinarians still receive \$100 from the CFIA for every eligible sample submitted.

If the veterinarian is already on farm and the animal has died or has been euthanized, the vet can remove the head and take it back to the clinic for sample collection. In all other situations, producers can bring the head to the clinic themselves provided they already have an established relationship with the veterinari-

an and the animal meets the criteria for testing. These are “4-D” animals (down, dying, diseased or dead) that are over 30 months of age, or are showing neurological symptoms.

**IMPORTANT: If the animal has died suddenly for unknown reasons, producers are asked to contact their veterinarian before taking off the head. Anthrax is present in the environment throughout the province, and heads should not be taken off unless there is no possibility that it died of anthrax.**

Because the head contains tissues that are considered

SRM (specified risk materials), a permit is required to transport a bovine head to the clinic (and back home again, if the clinic does not have disposal services). Most clinics have an SRM permit number that producers may use to transport SRM to their clinics. Producers are asked to contact their veterinarian to confirm and obtain the permit number and transport procedures. Alternatively, “emergency” (immediate need) permits can be obtained from the CFIA by calling 1-866-788-8155.

Producers are also asked to use their smart phone or a digital camera to take a picture of the intact carcass before removing the head from the body. They should include a photo that clearly shows the animals' ID tag, and make sure that the ID tag is intact and included with the head when delivered to the clinic. These pictures should be kept and will be required in the event of a positive test.

Over the years participation in Canada's BSE surveillance

program has gradually waned. Sample submissions have decreased from a high of almost 58,000 samples submitted for testing in 2005 to an all-time low of 26,285 in 2015. There was a modest increase in submissions in 2016, with 27,346 samples submitted. However, this is still below Canada's annual target of testing at least 30,000 animals per year.

Each province is assigned a number of tests based on the cattle population in the province. Saskatchewan producers are required to test approximately 7500 animals each year. Provincial participation has also decreased substantially over the years, with just 1572 samples submitted in 2016.

It is hoped that allowing producers to take heads to the veterinary clinic for sampling will encourage more producers to participate in BSE surveillance. For more information on the national BSE surveillance program, go to [www.inspection.gc.ca](http://www.inspection.gc.ca) and search for “BSE”.

# 2016 Testing Results for Equine West Nile Virus Infections at PDS

By: Dale Godson, Microbiology Laboratory (Immunology/Virology), PDS

It is that time of year when West Nile virus (WNV) infection becomes a differential diagnosis for neurologic disease in horses. Detection of IgM antibodies to WNV (indicating a recent infection) in a horse with neurologic signs is considered diagnostic for West Nile virus disease in horses.

In 2016, we had a brief but intense episode of WNV disease. The first positive case was tested on August 19th and the last on Sept 30th. During that period there were 34 cases of WNV disease diagnosed, which resulted in a 70% positive rate in submissions from August and September.

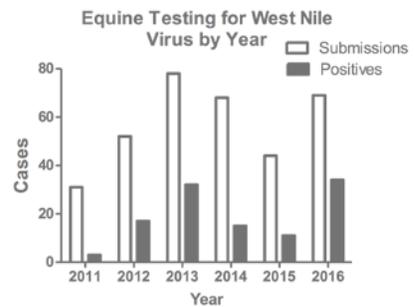
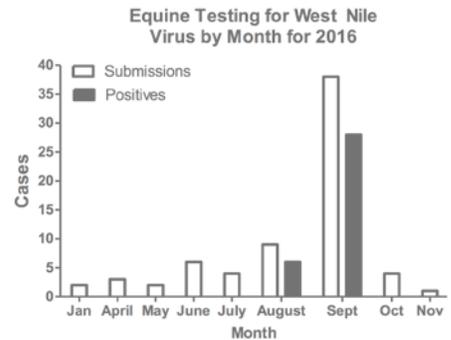
West Nile virus disease is a federally notifiable disease and PDS reports positive results to the Canadian Food Inspection Agency. It is also a provincially notifiable disease in Alberta and Saskatchewan. Consequently, accurate recording of the horse's location on the submission form is an important feature for disease surveillance. The Public

Health Agency of Canada maintains a summary of surveillance data for West Nile virus infections on their website (<http://www.phac-aspc.gc.ca/wnv-vwn/index-eng.php>)

PDS successfully completed a proficiency check test (100% agreement) for the WNV IgM ELISA administered by the USDA National Veterinary Services Laboratory.

*Table 1. 2016 WNV Submissions and Results by Province*

Prov	Neg	Pos	Total
AB	7	4	11
BC	1	6	7
MB	5	11	16
SK	22	13	35
<b>Total</b>	<b>35</b>	<b>34</b>	<b>69</b>



## Introducing the Animal Health Surveillance page on the Prairie Diagnostic Services web portal

By: Anatoliy Trokhymchuk, Disease Surveillance Veterinarian, PDS



Prairie Diagnostic Services has a mission of serving the animal health and animal agriculture industries in Saskatchewan and Western Canada. Providing diagnostic support for veterinary practitioners and food animal

producers is our core work. Each of the individual cases we see every day gives a small bit of information on how a specific industry is doing in general. Putting these pieces of puzzle together – across regions, spe-

cies, and time - gives a bigger picture of Western Canadian animal health current situation and trends.

Generating animal health intelligence from the large volumes of routine diagnostic data to the benefit of our stakeholders is a big part of our mission. Animal health surveillance in general becomes ever more important in the face of changing dynamics of the environment humans and animals share, emerging animal and zoonotic diseases, and requirement for access to international markets.

Please visit the PDS surveillance page for the latest reports, analyses, and insights: <http://www.pdsinc.ca/Resources/Termsofuse.aspx> OR use the following QR code on your mobile device:



# Dr. Yanyun Huang Presents at the 1st CM Swine Summit in China:

Dr. Yanyun Huang (Anatomic Pathologist, PDS) was invited to give two presentations at the Carthage & MHJ Agreitech Consulting Co., Ltd (CM) first Swine Summit in Suzhou, China in June. Dr. Huang spoke of his experiences as an immigrant to Canada while completing post-graduate training and working for PDS as a veterinary diagnostic pathologist. He also gave an overview of veterinary diagnostic laboratories in North America and provided

Chinese swine veterinarians with suggestions on how to obtain more accurate diagnoses.

The Chinese Animal Health industry is in desperate need of reliable veterinary diagnostic services. Dr. Huang hopes his presentations will shed some light on future directions for the Chinese veterinary diagnostic industry and is pleased and honored to have been able to contribute to global animal health!



## New Face at PDS



In March 2017, Kazal Krishna Ghosh joined PDS Inc. as a surveillance microbiologist. In this position, he will be focusing on developing PDS antimicrobial susceptibility testing capabilities as well as clinical bacteriology.

He has a keen interest in exploring the phenomenon of antimicrobial resistance in depth to the benefit of animal and human health. He is also interested in working with new molecular techniques in diagnostic bacteriology.

Kazal was born in Bangladesh where he completed his Doctor of Veterinary Medicine (2011) and Master of Science in Microbiology (2014) degrees. His master's thesis was focused on identifying antimicrobial resistant *E. coli* from water used in poultry farms. During this training, he developed an

interest in antimicrobial resistance in pathogens originating from poultry. In line of his interest, he moved to Canada and joined the Department of Veterinary Microbiology at the University of Saskatchewan as a Master's student in 2015. Kazal successfully earned a second Master's degree in May 2017. His graduate research project at the University of Saskatchewan focused on the molecular epidemiology of ESBLs producing *E. coli* from poultry. In addition, he received 'One Health' training through the Integrated Training Program

in Infectious Diseases, Food Safety and Public Policy (2015-2016). As part of this program, he completed an internship at National Center for Electron Beam Research, Texas, USA where he explored different new molecular techniques on food-borne pathogen research.

He loves to travel and taste different ethnic foods. Kazal is married and his wife, Dipika Majumder, is currently working as a nutritionist at Chittagong Diabetic General Hospital, Bangladesh. Please join us in congratulating Kazal on his new position with PDS.

## READERS' FEEDBACK

The **Animal Health Perspectives** editorial team (Dr. Moira Kerr, Brian Zwaan and Kathryn Tonita) invite readers' comment on material published in the newsletter or questions on material submitted by contributors.

Submit your comments or concerns to Dr. Moira Kerr (email: moira.kerr@pds.usask.ca) and they will be forwarded appropriately.