

Emerging, re-emerging and foreign animal diseases.....

By: Greg Douglas, Chief Veterinarian Officer, Saskatchewan Ministry of Agriculture

As the pace of global change quickens, the opportunity for infectious diseases to invade naïve populations increases. Whether the challenges are caused by climate change, more global contact between humans and animals, increased production of animal protein in developing countries or the complexity of animal product trade in the world is irrelevant. The fact remains that infectious diseases are putting significant pressure on societies around the world, and we will face the same pressures in Canada.

North America continues to struggle with Bovine Tuberculosis and Brucellosis. In Canada, we have seen the re-emergence of the previously eradicated Anaplasmosis, and other insect-borne diseases like West Nile virus and Lyme disease are expanding their distribution. As world authorities tabulate the damage caused by H1N1, Avian Influenza continues to threaten to become the next source of a pandemic.

Currently, Japan is coping with a Foot and Mouth Disease (FMD) outbreak that was the result of human spread of the virus from an endemic region in the world. The Japanese prime minister has had to reassure the public and allocate significant financial and human resources to eradicate FMD from Japan. Significant animal and genetic loss has resulted.

What can we do in Saskatchewan to prepare or respond? Veterinarians can become members of the Canadian Veterinary Reserve, which is administered by the Canadian Veterinary Medical Association. This reserve

provides an important piece of the response in the event of an outbreak. Veterinarians could be called on to provide their expertise in disease control, eradication or communication during an outbreak.

Veterinarians can reinforce strong biosecurity messages to their clients and communities. Veterinary clinics should be models of biosecurity because the protocols that are used daily by veterinarians have a powerful influence on animal owners.

Veterinarians hold a unique position in society because they act as bridges between the animal and human sciences. They have an opportunity to foster relationships with local wildlife, agricultural and the human health organizations. This local application of the ‘One World - One Health’ concept can help communities to understand the links between the perspectives of each discipline. This understanding will empower communities to prepare with the confidence that disease events can be effectively managed.

Governments at all levels have an ongoing obligation to plan and prepare. The outcome of the response at the local level will be determined by how effectively all levels of government and non-government work together.

PDS Recognized for Accreditation Status within CAHSN Network

By: Marilyn Jonas, CEO, PDS and Musangu Ngeleka, Manager, Microbiology Laboratory, PDS

At the recent annual meeting of the Canadian Animal Health Surveillance

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Network (CAHSN), PDS was recognized as the first laboratory within the laboratory surveillance network across Canada and outside of the National Centre for Foreign Animal Disease, to achieve accreditation to ISO/IEC 17025 for all of the ELISA and PCR Foreign Animal Disease tests offered by the laboratory network. The accredited tests include Avian Influenza, Newcastle Disease, Foot and Mouth Disease and Classical Swine Fever. PDS’s scope has been approved by Standards Council of Canada (SCC) for these tests, as well as CDC Triffid Flax, which is a new service being offered to grain companies involved in shipping flax for export. The revised scope is available on the SCC website (http://palcan.scc.ca/specs/pdf/330_e.pdf).

This is a significant achievement for the laboratory and we would like to recognize the leadership of our quality managers, Gail Krohn and Karen Moline.

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We would also like to acknowledge all of the laboratory staff that worked very hard in implementing the procedures and protocols necessary to achieve this status. Our quality management program is critical to continue making improvements in our operations and ensures excellent customer service.

The National Voluntary Beef Cattle Biosecurity Standard

By: Kathryn Ross, Animal Health Program Officer, Saskatchewan Ministry of Agriculture



The Canadian Food Inspection Agency (CFIA) and the Canadian Cattlemen's Association (CCA) have begun developing a National Voluntary Beef Cattle Biosecurity Standard with funding provided under the *Growing Forward* Agriculture Policy Framework. In order to complete this task, the CFIA and CCA formed the Beef Biosecurity Advisory Group, which consists of representatives from industry, academia and federal and provincial

governments. The need for a national standard emerged from the **"One World - One Health"** strategy promoted by the World Organization for Animal Health (OIE), as well from the need to verify market access and the on-farm practices that contribute to a country's animal health status.

The first step in the process of developing a national standard is to understand the current state of biosecurity within the industry. **A national on-farm consultation process has begun to establish a baseline of current biosecurity practices in Canada's beef cattle industry.** Having a baseline can help determine best practices and also provide a benchmark of current practices to help demonstrate the need for a standard specific to the beef industry. While other industries have national standards (e.g. National Avian On-Farm Biosecurity Standard (<http://www.inspection.gc.ca/english/anima/biosec/aviafrme.pdf>)), it is important to document the differences between extensively- and intensively-raised animals.

Methods for raising beef cattle in Canada vary from region to region (Atlantic Canada, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and B.C.). To allow for these differences, the on-farm consultation will involve a statistically-sound sample of producers from across the country, with consideration being given for regional, operational and size distributions. For example, a larger sample of producers will be taken from Alberta, which has the largest beef herd in the country. As well, these consultations will take place on both

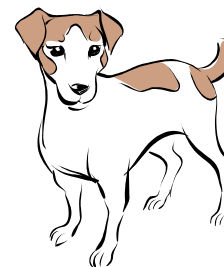
cow/calf farms and feedlots to account for variation in production practices.

The consultations will be conducted by trained individuals who work in the beef industry and have knowledge of the importance of animal health. They will take approximately two hours to complete and can take place either in the farm office or around the kitchen table. **Data recorded in the consultation is confidential and cannot be traced back to the individual producer unless the producer volunteers for further contact.** The consultation questionnaire will include information about animal introduction, animal movement, animal removal, health monitoring, mortality and manure management, sanitation practices, facility maintenance, pest control, record keeping, biosecurity training and traffic controls.

Determining the beef industry's current biosecurity practices associated with animal health risk management will help ensure the National Voluntary Beef Biosecurity Standard will be a cost-effective and useful tool to manage animal health issues that arise within Canada and with trading countries. A National Voluntary Beef Biosecurity Standard can also contribute to profitable marketing of safe healthy food by addressing risks pertaining to animal health and, in some cases, food safety.

Secondary Lead Poisoning in a Dog

By: Dr. Barry Blakley, Supervisor, Diagnostic Toxicology, PDS



Lead poisoning is becoming a common occurrence in Saskatchewan livestock. The number of livestock diagnosed annually has increased two to three fold in recent years. Food safety issues in affected cattle are a major concern. Recently, lead poisoning was diagnosed in a herd of cattle and several animals in the herd died after ingesting lead from improperly disposed machinery batteries. The dead cattle were transported to a nearby field but were not buried. From a diagnostic perspective, the case was handled and resolved in a routine fashion.

Several days after the cattle died, the same producer presented a dog to a local practitioner for depression, disorientation, mild ataxia, head pressing, nystagmus and anorexia. Serum hepatic enzyme activities and the serum blood urea nitrogen (BUN) concentration were high normal. The dog did develop diarrhea but vomiting was not observed. Given the poor prognosis, the owner consented to euthanasia and the dog was submitted for postmortem examination.

There were minimal lesions on gross examination. Given the recent diagnosis of lead poisoning in the cattle, a blood sample was submitted from this dog for lead determination. The blood lead concentration was 2.17 mg/l. Blood lead concentrations greater than 0.35 mg/l are toxic in most species and concentrations exceeding 1-2 mg/l are often fatal. Where would a dog encounter such high concentrations of lead?

The liver and kidneys of cattle that have died from lead poisoning can have lead contents of up to 200 mg/kg. Consumption of these organs by scavengers can result in acute lead poisoning. It was conjectured that this dog had consumed the highly palatable liver and kidneys from the unburied cattle that had died of lead poisoning. A variety of clinical signs can be observed in dogs with lead poisoning, including: gastrointestinal signs (e.g. loss of appetite, abdominal pain, diarrhea and vomiting) and neurologic signs (e.g. blindness, seizures, difficulty walking, tremors, or usual behavior). The gastrointestinal irritation associated with lead salts was initially absent in this dog—likely, the lead was initially “protected” by the food material. Lead salts were released in the lower bowel following digestion and diarrhea ensued. Rapid absorption of the lead in the lower bowel resulted in the extremely high blood lead concentration.

This case of secondary lead poisoning in a dog emphasizes the importance of proper disposal of contaminated carcasses. Secondary poisoning is uncommon with lead but is frequently observed in scavengers that consume tissues from animals poisoned with strychnine, organophosphate or carbamate insecticides.

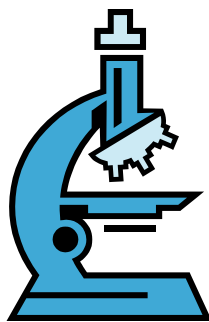
The Benefits of Quality Control, Inter-laboratory Comparisons and External Proficiency Programs in the Laboratory or Clinic

By: Gail Krohn, Quality Assurance, PDS

At Prairie Diagnostic Services Inc. (PDS) the following programs are utilized to maintain our confidence and demonstrate validity in our results: Quality Control, Inter-Laboratory Comparisons and External Proficiency Panels. First, let's start with the definition and purpose of each of these programs.

Quality Control (QC) provides routine monitoring of results by using reference standards or control values with known constituents. The mean and standard deviation (SD), usually included with the materials, indicate the target range you should achieve. If the mean and SD are not provided, your facility may have to determine these values prior to use. The QC material is monitored at regular intervals to determine if results are within a 2 SD range. If the results are within 2 SD, the instrument is acceptable and routine samples can be tested. If the reference materials are acceptable this provides confidence that your patient sample results will be valid.

Inter-Laboratory Comparisons are reference materials sent from a common provider to several laboratory facilities on a predetermined schedule. The samples are tested and the results are sent back to the provider. The results are analyzed to determine the mean and standard deviation so that 95% of the



laboratories fall within the established range. Your results are compared to results from other laboratories. You can utilize this information to compare your instrument's operation to other laboratories using the same instrument and to other instruments. Facilities that have results that lie outside the 95% may need to investigate source of errors in training, or environmental and instrumentation problems.

External Proficiency Test is a reference material that is sent to your facility on a predetermined schedule, where the actual results have been established by the provider. You run the test on the reference material, your results are sent to the provider, compared to the provider's actual result and your results are deemed either 'satisfactory' or 'unsatisfactory'. Running a Proficiency Test Panel is a requirement for laboratory accreditation to demonstrate training, instrumentation and environmental conditions are adequate to demonstrate validity. The results are used to identify and correct any deficiencies in a timely fashion.

Participation in programs such as: Quality Control, Inter-Laboratory Comparisons and External Proficiency Test panels are powerful tools that can be used in the laboratory or clinic. Although there is a cost to run routine quality control and inter-laboratory comparisons; **knowing that you are providing valid information to your clients is priceless.**

Most instrument manufacturers will provide you with information on specific quality control materials that may be best suited for your instrument. The Veterinary Laboratory Association Quality Assurance Program ® provided through Genzyme Diagnostics has been a valuable tool for assuring PDS test results. For more information on the Veterinary Laboratory Association Quality Assurance Program ® contact Stacie Hotham, VLA Quality Assurance Program Consultant, Fax: 207-433-1018, Email to Stacie Hotham: jshotham@pshift.com

Johne's disease---the next big thing?

By: Andy Acton, Client Services Representative, PDS

Ontario dairy farmers and veterinarians are receiving support from their provincial government to prevent the spread of Johne's disease (JD) in Ontario dairy cattle. The

Johne's Education and Management Assistance Program (Johne's Program) Working Group is an industry-led, four year initiative focused on preventing the spread of Johne's disease. Testing costs are supported by the program. Although culling of positive cows is not mandatory, it is strongly encouraged through reimbursement. Each of the provinces has dealt with JD in different ways. Alberta has done a particularly good job of JD research in their provincial dairy and beef herds. JD information can be found on a variety of websites to educate producers and veterinarians.



The program is a positive step in dealing with a disease that has a potential public health concern. A big problem with JD is its' insidious nature. There are no big epidemics with piles of dead cows or eye-catching, front page headlines proclaiming product recalls due to a zoonotic infection. The investigation linking Johne's to Crohn's disease continues to grow it would be wise for those of us in bovine practice to do more JD control and education with our beef and dairy clients.

ELISA testing of milk or serum is the test advocated in the Ontario program. However, the low sensitivity of this test makes finding positive animals frustrating. The sensitivity of the test does increase as a case progresses; so testing animals with suspicious clinical signs by this method is somewhat more rewarding. I have noticed that in the beef herds where we established JD, subsequent control was actually fairly easy because the producer knew to isolate diarrheic cows immediately. The big hurdle for beef herds is finding positive animals and using a positive case as an educational tool to prevent or reduce the spread of disease in that herd. Standard fecal culture is still the gold standard for JD testing and different culture methods are employed by different labs, with a goal of lessening turn-around times and/or improving the sensitivity or specificity of the test. For those of us in practice, the combination of ELISA testing with standard fecal culture is a useful method of testing.

What I hope to see is continued and increasing support from the public sector to help the dairy and beef industries manage JD. JD is a very big fish to fry and the industry and public health are best served by a strong and coordinated approach to this disease—**before it becomes the 'next big thing'**”.

PDS Adds ELISA Bovine Pregnancy Test to Reproductive Tool Kit

By: Marilyn Jonas, CEO, PDS and Susan Cook, Endocrinology Laboratory, PDS

PDS has recently added a new diagnostic tool called BioPRYN® to its selection of tests for dairy and beef cattle practitioners and their clients. The blood-based test is a 100 percent embryo-safe process and can detect pregnancy as early as 30 days post-breeding in heifers and lactating cows.

BioPRYN uses an enzyme-linked immunosorbent assay (ELISA) to locate the presence of Pregnancy Specific Protein B (PSPB), a protein that is produced by the placenta and only found in a pregnant cow's blood. Blood is drawn from the tail or jugular vein and then submitted, through a veterinarian, to the lab for evaluation.

PDS will initially run the test once per week, with results available Friday afternoon for samples received in the

laboratory by 2:30 pm on Thursday. If a large number of samples are submitted at once, the test can be run on other days. The cost is \$4.50 per sample.

The test manufacturers claim that research in peer-reviewed journals has consistently demonstrated the accuracy of the BioPRYN test at 97 percent and that the test is 99 percent accurate in identifying non-pregnant (open) females.^{1,2} This provides confidence that hormone-based management programs that induce ovarian recycling and rebreeding can be used safely once the results are known.

BioTracking, LLC, based in Moscow, Idaho manufactures the test (www.biotracking.com) and PDS is one of two affiliate service providers in Canada offering the test. For additional information on testing call the Endocrine laboratory at (306) 966-7373.

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1. Howard J, Gabor G, Gray T, Passavant C, Ahmadzadeh A, Sasser N, Pals D, and Sasser G. BioPRYN, A blood based pregnancy test for managing breeding and pregnancy in cattle. Proceedings, Western Section, American Society of Animal Science 2007; 5: 295-298.
2. Breed MW, Guard CL, White ME, Smith MC and Warnick LD. Comparison of pregnancy diagnosis in dairy cattle by use of a commercial ELISA and palpation per rectum. Journal of American Veterinarian Medical Association 2009; 235: 292–298

Future New Veterinarian in Saskatchewan

With a bit of sadness and a wish for a bright future we say good-bye to a member of the Animal Health Unit. Maria Fuchs has been accepted into the Western College of Veterinary Medicine.



We will miss her strong work ethic and commitment to the principles of public service. She has been a valued member of our group.

We would also like to congratulate her on the continued pursuit of her dream to be a veterinarian.

Quote: "Life can only be understood backwards, but it must be lived forwards."—Soren Kierkegaard (philosopher, 1813–1855).

Readers' Feedback

The **Animal Health Perspectives** editorial team (Dr. Moira Kerr, Crystal Wagner and Kathryn Ross) invite readers' comment on any 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. To be added to the distribution list for the electronic link, email: crystal.wagner@gov.sk.ca