

Animal Health Monitor

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Ministry of
Agriculture

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Reflections from the Chief Veterinary Officer

R.P. Kitching, Chief Veterinary Officer and Director, Plant and Animal Health Branch



New and emerging diseases are a constant threat to the human and animal population. They are difficult to predict. The appearance of SARS was totally unexpected, and it was fortunate that it did not become established, but disappeared without making the final adaptation for efficient survival and transmission in humans. When the H5N1 flu virus first appeared in Asia, we were told by the World Health Organization that it was not a question of “if”, but “when” it would spread as a human pandemic and cause mortality similar to that caused by the Spanish flu of 1919. While technically it was declared a pandemic, we were again lucky that the “inevitable” consequences did not happen – although some would say that it still could happen. Similarly with the more recent H1N1 flu virus; it has been absorbed into the general background of respiratory disease that affects us all.

But while we cannot predict the behaviour of pathogens moving from a reservoir host to a new host, such as SARS or avian flu to humans, some remain a threat to their traditional hosts. This is particularly true of animal pathogens which we attempt to control by preventing the international movement of potentially infected animals, or contaminated animal products. However, during the large outbreak of foot and mouth disease in the United Kingdom in 2001, it became apparent that the illegal trade in animal products was extensive. Customs and Excise, the department that controls the movement of products into the UK, is usually focused on illegal drugs and undocumented people, but when they looked at what else was coming into the country as part of the FMD control response, it was discovered that whole containers full of meat products were being shipped in from Asia, with totally false certificates. Attempts to shut this “stable door” have only been partially successful, as

recorded by the continuing high seizure rates for illegally imported animal products reported in the UK each year since 2001.

It is likely that similar levels of illegal importations occur in North America. Fortunately, the major animal pathogens are not ever likely to adapt to humans (other than influenza), and should these illegally imported products be infected with a pathogen such as foot and mouth disease virus, there would be little risk, except if it were fed, uncooked, to a pig. This is the normal route of transmission of foot and mouth disease virus to pigs, and pigs, once infected, generate a very large amount of virus as an aerosol, which, under the right environmental conditions, can transmit up to 10 kilometers. Cattle are also susceptible to foot and mouth disease, usually becoming infected by the respiratory route, such as by an aerosol of virus produced from infected pigs. This is how major outbreaks occur.

The growing popularity of backyard and urban livestock, particularly the keeping of chickens, could logically progress to a revival in small scale pig husbandry. This could see the return of the more traditional European breeds and a greater appreciation of their virtues. However, it also vastly increases the risk of the return of the traditional diseases. The only protection that we have against the emergence of a major animal disease in Canada is to prevent the final step in the transmission cycle, in which the pathogen enters a susceptible animal. We cannot entirely prevent illegal imports or travelers bringing in animal products in their luggage, but if the opportunity exists to feed those potentially virus contaminated products to a pig in the backyard, sooner or later it will happen. It happened in UK in 2001, and cost the economy over \$20 billion, and untold human and animal misery.

***Corynebacterium pseudotuberculosis* in horses in British Columbia**

Ann Britton, Veterinary Pathologist and Nancy de With, Veterinary Epidemiologist

During the fall and winter, we have become aware of a number of cases of *Corynebacterium pseudotuberculosis* infection in horses in B.C. This bacterium can cause several clinical manifestations:

1. External abscesses (pigeon disease, dryland fever),
2. Internal abscesses,
3. Ulcerative lymphangitis, and
4. Folliculitis (Canadian horse pox, contagious acne)



In order to assess the current situation, we sent a short survey to clinics to help delineate the most common clinical characteristics, the time frame and the geographical extent of reported cases. Surveys were sent to 156 equine, large animal, and mixed practices in B.C. We have received responses back from 49 clinics so far.

Here are some of the preliminary results from the first 47 responses:

- 9 clinics (13 vets) have reported seeing cases of *C. pseudotuberculosis*
- 4 of those clinics have seen 50 or more infected horses

- Of about 350 symptomatic horses on 160 different premises, 16 were lab diagnosed
- External abscesses were reported most often, followed by lymphangitis
- Abscess locations were the pectoral region and ventral abdomen, followed by mammary, prepuce, head, and inguinal areas, and least often in the axilla
- The clinical progression most commonly described is edema, followed by fever, lameness, and non-healing wound, and less often colic, weight loss, and dermatitis.
- There does not appear to be any breed predilection; a variety of breeds of horses have been affected.
- Clinics reported infection most often in horses between the ages of 5-24 years old

From information gathered to date, it appears that the outbreak began in the summer of 2009 in the south Okanagan, in the area from Osoyoos to Oliver, and from Keremeos to Rock Creek. We have heard reports of 50 or more horses that were infected in 2009, while there have been only a few cases in the south Okanagan in 2010.

In the central Okanagan, there was one suspicious case in 2009, and in 2010 several hundred cases occurred in that area, from Westbank north to Vernon, and all areas in between. The earliest reports were in June, and some clinics were still seeing cases in late November. There have also been a few reports of infected horses in the Salmon Arm/Falkland/Pritchard/Monte Lake region during October and November 2010.

In addition, a few individual horses with *C. pseudotuberculosis* have been reported outside the Okanagan—these are horses that had recently been moved out of the Valley.

We are working with Dr. Manuel Chirino-Trejo at WCVN to characterize circulating strains of the bacteria using molecular laboratory techniques and to determine if flies are contributing to the spread of the disease in B.C. In this effort, he welcomes swabs from affected horses, flies from barns, and serology from both affected horses and “healthy” in-contact horses. Although this laboratory work is offered at no charge, we cannot cover the cost of collecting and shipping the samples. Samples can be submitted directly to Dr. Chirino-Trejo at WCVN, or can be submitted to the Animal Health Centre and we will forward them on to WCVN. This laboratory molecular work will not be completed until sometime in the spring, when the samples can be batched and run at one time.

Currently the Animal Health Centre is sending sera received here for diagnostic *C. pseudotuberculosis* testing to the University of California at Davis every other Monday. Results are usually available in 2 to 3 days. The cost of the test is \$11.00 USD and the Animal Health Centre pays the cost of shipping from Abbotsford to Davis. Please submit serum with both an Animal Health Centre submission form and a UC Davis submission form. To receive both forms by email call the number below.

We will gladly accept additional surveys to further characterize the extent of this outbreak. If you have questions, please contact us at 604-556-3003 or toll free at 1-800-661-9903.

New Insights on the Fish Farm-Sea Lice Controversy

Gary Marty, Fish Pathologist



Declines in wild Pacific salmon populations are likely not caused by sea lice acquired from farmed salmon. Animal Health Centre fish pathologist Gary Marty and colleagues analyzed newly available historical data on wild and farmed salmon from the Broughton Archipelago of western Canada to determine how sea lice impact the large annual swings in wild salmon populations. The authors found that the number of wild salmon that return to spawn in the fall can predict the number of sea lice that will be found on farmed salmon the following spring, which, in turn, predicts the extent of sea lice infestations in young wild salmon.

However, the survival of wild salmon populations is unrelated to the number of lice on farmed fish or to farm fish production (tonnes per year). The findings indicate that other factors, such as environmental stressors or infectious diseases, contributed to the massive population decline in wild salmon in 2002. The study further suggests that attempts to separate farm salmon from wild salmon will not benefit the wild populations. Dr. Marty worked on the paper through his appointment as a Research Associate with the School of Veterinary Medicine, University of California, Davis. You can view the paper and “Questions and Answers” at the university web site:

<http://faculty.vetmed.ucdavis.edu/faculty/gdmarty/default.html>

Marty, G.D., S.M. Saksida, and T.J. Quinn II. 2010. Relationship of farm salmon, sea lice, and wild salmon populations. Proc. Natl. Acad. Sci. U.S.A.

In a recent Ministry reorganization, the Plant Health Unit joined the Animal Health Branch to form the new **Plant and Animal Health Branch**. The Plant Health Unit, lead by Dr. Linda Wilson, has laboratories and staff in Abbotsford and Kelowna, including a team of pathologists, entomologists, and pesticide specialists. Working closely with industry and agency partners they enable and apply best practices to agricultural plant disease, pest and management issues. The plant health laboratory, performs diagnostic analysis on more than 600 submissions annually; the most common plant pathogens are fungal, but bacterial and viral diseases, insects, and nematodes also cause plant health problems. Most of the plant submissions come from regional commercial crop industries. The Animal Health Centre has a long-standing partnership with the Plant Health Laboratory, and we are very pleased that they are now officially part of our branch. More information on the Plant Health Unit is on the web at: www.al.gov.bc.ca/cropprot/nonnativepests.htm

Fowl Memories Revisited

Bill Cox, Poultry Extension Veterinarian

When a significant disease event occurs, it often seems like it is unprecedented. Sixty years ago, in 1950, our poultry industry was hit with a devastating disease – Newcastle Disease (ND).

The first flock diagnosed with ND was identified in February, 1950. In March, two more infected flocks were detected, and the outbreak exploded from there. In all 533,047 birds from 345 flocks were euthanized by the end of December 1950. Detections of ND continued through 1951 (150 flocks) and 1952 (43 flocks). Within 3 years, 538 chicken flocks and 16 turkey flocks, representing 878,870 birds were destroyed. Compensation of \$1,161,526 was recommended by the end of the epizootic.



With the first detection of ND, the Health of Animals Branch of the federal Department of Agriculture (Canadian Food Inspection Agency's predecessor) took control. The initial response strategy was to quarantine and slaughter infected flocks. This action, however, did not effectively limit the spread of the disease and the number of flocks detected increased from 2 in March to 136 in May. In July, 1950, a vaccination program was started using a killed vaccine. The immunity provided by this vaccine was short-lived, and did not control the disease effectively, so a new vaccine strain, manufactured by the Animal Disease Research Institute (ADRI) in Quebec, was introduced in January 1951. This vaccine also failed to meet expectations even with modifications and with ND continuing to appear in vaccinated flocks, the vaccination program was discontinued in November, 1951.

As the ND epizootic progressed in British Columbia, a new vaccine was developed and used in the US. In February 1952, this new modified live vaccine was brought into Canada and control of ND achieved in BC's flocks by the end of 1952. Interestingly, The British Columbia Department of Agriculture (predecessor of the Ministry of Agriculture) held the permit for the vaccine and became the distributor of the product to veterinarians and drug stores.

Serious outbreaks of disease in animal populations are not new and even in the much less densely farmed times of the 1950's a serious epizootic derailed the poultry industry. The message of careful attention to disease control and health can never be forgotten. I must give a big "Thank you" to Mr. Jerry Olynyk of Chilliwack, who lived through this epizootic and brought this story to my attention.

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"The more we learn from the past, the more prepared we are for the future." anonymous

Barbiturate Poisoning in Bald Eagles

Victoria Bowes, Avian Pathologist

The B.C. Branch of Canadian Wildlife Service (CWS) has a dedicated toll free telephone number for members of the public to report unusual mortality in wild birds. This reporting line assists in identifying wildlife cases requiring field investigation as well as providing birds for sampling in support of the Avian Influenza and West Nile Virus Surveillance Programs. Earlier this summer a member of the public reported seeing several Bald Eagles having difficulty flying near the Campbell River Landfill. A CWS wildlife technician assisted by staff from a local wildlife rehabilitation centre responded and were able to capture five live Bald Eagles. The birds were showing signs of ataxia, sluggishness, slow pupillary reflexes and inability to fly. One juvenile bird was unconscious for almost a day and as it recovered, it regurgitated ingested tissue that looked like liver. Serum samples and the regurgitated tissue were submitted to the Animal Health Centre with a strong suspicion of barbiturate poisoning based on the clinical presentation and history of proximity to a landfill. The submitted samples were tested for 6 compounds in the barbiturate family and were negative for Phenobarbital, Butabarbital, Butalbital, Secobarbital and Amobarbital. All samples were positive for Pentobarbital, the primary agent used by veterinarians in performing humane euthanasia of domestic animals. It is likely that legally euthanized animals from a veterinary clinic were not immediately covered at the landfill and were scavenged by the affected Bald Eagles. This issue is well documented and is a reminder that landfill operators and those responsible for disposal of euthanized animals need to practice proper burial procedures to prevent toxicity in scavengers.



Interdisciplinary Symposium on Controlling *Salmonella* Enteritidis in Canada

Bill Cox, Poultry Extension Veterinarian

The safety of our food supply is a topic of high importance to all of us and, particularly, to our food producers. In British Columbia, public health and animal health staff have been working together with industry partners for 3 years to assess an increase in human food borne infections due to *Salmonella Enteritidis* (SE), along with a concurrent rise in isolates from poultry sources. SE is a bacterium that can make people ill when consumed, and poultry, eggs and poultry products have been reported as common sources of infection for people. Similar trends and efforts are going on in other provinces.

Recognizing the complexity in not only controlling but also investigating the disease, a multi-agency steering committee lead by BC Ministry of Agriculture and BC Centre for Disease Control organized a scientific symposium and facilitated workshop which were held in

Vancouver on Dec 1 and 2. Representatives from local, provincial and federal public health and animal health agencies, and all segments of the poultry industry, including producers, processors, and some of their supporting trades participated. The goals were to share knowledge and develop some common strategies toward improving the investigation and control of SE in people and animals.

The symposium presentations outlined the current public and animal health epidemiological status and challenges with investigating and controlling SE, the regulatory framework, and information on existing programs such as the egg farmers SE control program. International programs and lessons were described by Dr. Henrik Wegener of the Danish National Food Institute and Dr. Richard Gast of the U.S. Department of Agriculture. The symposium was a good opportunity for each group to learn about the status and challenges experienced by others.

The following day, small interdisciplinary groups prioritized the challenges, actions, and leadership roles involved in controlling SE in a professionally facilitated workshop. Momentum was created to align industry and government to address SE. A final report on the symposium and workshop will be presented to government and industry leaders to garner resources and support for this important collaborative health initiative.



The Twins (After Engraving By George Zobel) 1872, Edwin Henry Landseer (1802-1873 British)

The Ministry is reviewing the animal health policy and is seeking the public's view on animal health issues. We are asking for input from those whose work is affected by animal health issues. The ministry is now at the consultation stage and the animal health consultation website has been launched. The deadline to provide feedback is January 23, 2011.

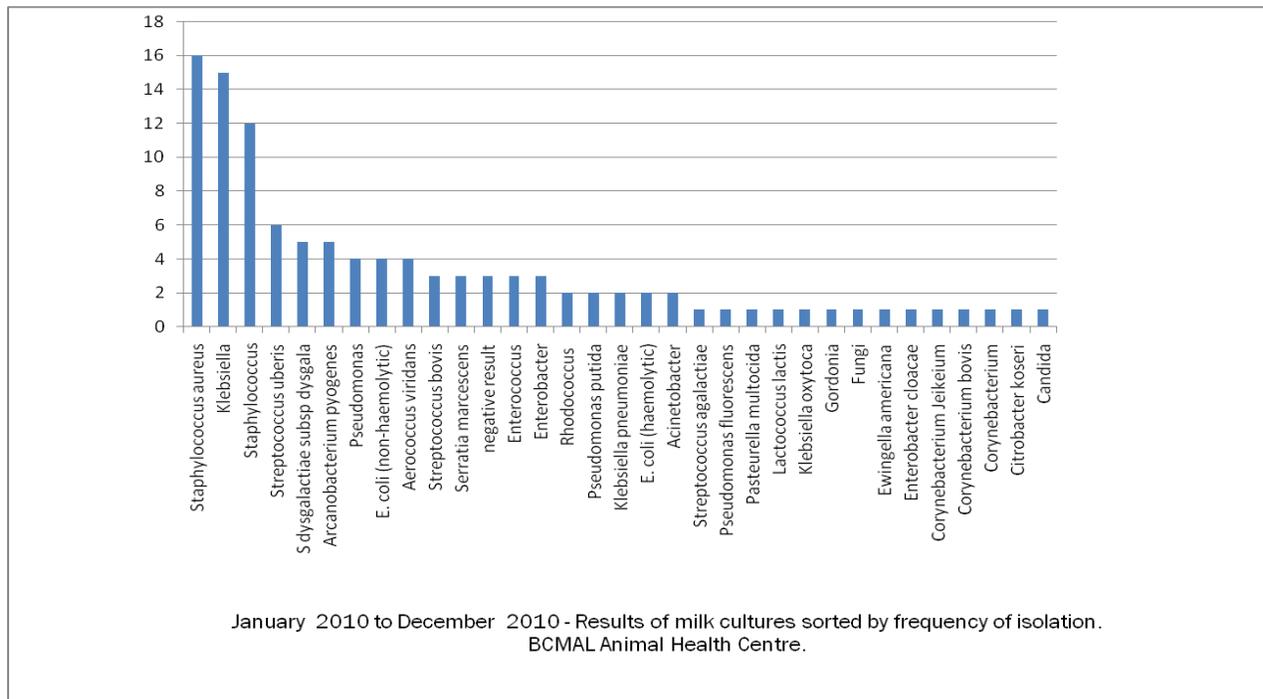
For more information on the animal health policy review or to participate in the consultation, please visit: <http://www.agf.gov.bc.ca/ahb>.

News release: http://www2.news.gov.bc.ca/news_releases_2009-2013/2010AGRI0003-001469.htm

Milk culture results

Jane Pritchard, Manager Livestock Health and Regulatory Unit

The graph below shows the type and frequency of bacteria isolated from 512 diagnostic milk samples from cattle with mastitis submitted to the Animal Health Centre for culture and sensitivity between January 2010 and December 2010.



[When multiple samples from the same submission yield the same organism these are only counted once per submission and are pooled for sensitivity.]

Resistance by isolate	amp	kf	ob	e	xnl	p10	pyr	sxt	tet	# of isolates tested
Klebsiella spp.	100%	27%	100%	100%	20%	100%	100%	0%	20%	15
Staphylococcus aureus	13%	0%	0%	0%	0%	13%	6%	0%	0%	16
Staphylococcus spp.	33%	0%	42%	8%	8%	33%	17%	0%	25%	12
Streptococcus uberis	17%	17%	50%	0%	17%	17%	17%	17%	17%	6
Streptococcus dys sub dys	0%	0%	0%	0%	0%	0%	0%	0%	100%	5

amp → ampicillin, kf → Cephalothin, ob → Cloxacillin, e → erythromycin, xnl → Excenel, p10 → penicillin, pyr → Pirlimycin, sxt → sulfamethoxazole/Trimethoprim, tet → tetracycline

The chart above shows results of antimicrobial resistance testing for the 5 most frequently isolated organisms. *Arcanobacterium pyogenes* is not included because its characteristic slow growth on culture results in the sensitivity test being unreliable.

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Dr. Don McIntosh, pathologist at AHC retires

Dr. Don McIntosh retired in December 2010. After graduating with a Doctorate in Veterinary Medicine from Western College of Veterinary Medicine (WCVM) in 1970, Dr. McIntosh practiced mixed animal veterinary medicine in the interior region of BC. In 1979, he returned to WCVM to earn a MVSc degree in pathology and in 1981 he started his pathology career with a position in the Regina Veterinary Diagnostic Laboratory. He spent 25 of his 30 years as a veterinary pathologist at the Animal Health Centre (AHC) in Abbotsford.

Don's experience and work in diagnostic pathology made him an invaluable resource to veterinarians and producers in B.C. His interest in livestock led to the recognition of Neospora infection as a cause of bovine abortion in B.C. (Canadian Veterinary Journal 1994; 35: 114-115). His proficiencies spanned across the range of species that are submitted for necropsy to the AHC including companion animals, marine mammals, exotic animals, livestock and poultry.

Reflecting on his career, Dr. McIntosh offers a seasoned perspective on the advances that were made in pathology, highlighting major progress in diagnostic testing including development of molecular testing capacity, immunohistochemistry and polymerase chain reaction. He also noted the increase in specialization in both veterinary medical practice and in pathology. His forecast for retirement is to "do what I want, when I want to do it" and we suspect that golf, fishing, and time with grandkids might be in the picture.

The Animal Health Centre staff are privileged to have worked with Don for so many years. We wish him and his wife a happy and healthy retirement, and hope to keep in touch.



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