

Animal Health Monitor



Ministry of
Agriculture
and Lands

Abbotsford Agricultural Centre
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Message from the Chief Veterinary Officer

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



Scientific Integrity

Recent reports in the media will likely have dented public confidence in the integrity of science. The withdrawal by the medical journal *Lancet* of a previously published paper purporting to show a relationship in young children between autism and the measles, mumps and rubella (MMR) vaccine, and the manipulation of the results of experiments related to climate warming at the University of East Anglia in the UK are two examples of poor science, the public acceptance of which has had huge impact on opinion and government policy.

Most of us accept that a lot of what we hear or read in the general media is not always accurate, but when we see reports from reputable scientific

journals, whose papers have been peer reviewed by experts in the particular field, it is not unreasonable to give them a high level of credibility - particularly when they are concerned with issues such as child health and environmental catastrophe. The consequences of parents not vaccinating their children because of fear that they would also produce autism have been immense in terms of re-emergence of sometimes fatal childhood diseases that had previously been almost eradicated in Europe and North America. The global concern with climate warming that has spawned a crusade against the generation of carbon dioxide

and billions of dollars in carbon transfer payments was believed to be supported by unequivocal scientific data endorsed by the UN itself.

But then we hear that the relationship between MMR vaccine and autism is in no way established by the published results, and that climate warming could be unrelated to human activity - as evidenced by the episode of climate warming that occurred during the Middle Ages, and records of which had been suppressed.

Scientific results are interpreted first by the researcher carrying out the experiment or analyzing the data, and then are scrutinized by referees on behalf of the journal publishing the paper. But what if the field of science contains only a limited number of such experts with the time to critically assess the quality of the science, and what if these referees, who are also reliant on the success of their own publications for their future funding are scientific collaborators of the authors of the papers they are refereeing ? Then the ingredients exist for a single message and the exclusion of any dissent from outside the cabal. Such a scenario appears to have occurred with the literature on climate warming. But in my opinion, this is not an exception. There are numerous such closed communities within different fields of science which put forward their particular agendas, and suppress others by being on editorial boards and grant committees which only support their like-minded colleagues. And of course the more these individuals thrive and publish, the greater their influence.

It is reasonable for the public to question the scientists whose salaries are supported by tax dollars, and this is the delegated responsibility of referees and reputable scientific journals. But, as in so many areas of human activity, who is able to audit the auditors.

Influenza A Pandemic (H1N1) 2009 Virus in Skunks

On January 12, 2010 two skunks were presented to the Animal Health Centre for post mortem examination. These were 2 of 8 skunks which had died suddenly over the preceding month on a mink farm. Both skunks had heavy, dark red to purple lungs suggestive of pneumonia. Microscopically, severe bacterial bronchopneumonia with areas of interstitial pneumonia and a mild lungworm infection was observed.

Routine bacteriological culture of lung revealed heavy growth of mixed bacteria. It was considered unlikely that uncomplicated mixed bacterial bronchopneumonia had caused acute death in two, and possibly up to 8, adult skunks over a short time period. The presence of lungworm was considered incidental. However, the areas of interstitial pneumonia suggested that a primary viral pathogen was likely so molecular testing was conducted for Canine Distemper (CDV) which was found to be negative. PCR tests for Influenza A virus were positive and subsequently determined to be Influenza A pandemic (H1N1) 2009 strain. Immunohistochemistry demonstrated Influenza A virus in both airways and alveolae of the pneumonic lungs and death due to pneumonia caused by Influenza A pandemic (H1N1) 2009 virus with secondary bacterial bronchopneumonia was diagnosed.

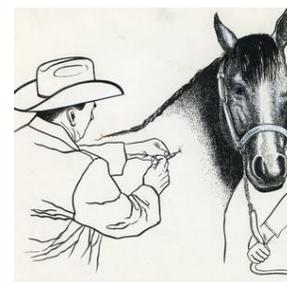
Influenza A Pandemic (H1N1) 2009 virus (pH1N1) has spread widely around the world since its first detection in California in April 2009 (1). Most infected individuals have been humans. However, pH1N1 has infected swine and turkey farms and a handful of pet ferrets, cats, captive cheetahs and a dog. Many of these animals were owned or looked after by people who reported symptoms of influenza, some of whom were confirmed to be pH1N1 positive, suggesting reverse zoonosis or human to animal spread of the virus.

How pH1N1 was transmitted to free-ranging skunks is unclear. Workers on the mink farm did not recall having experienced any flu symptoms prior to the death of the skunks. However, we suspect that asymptomatic human pH1N1 infection may have occurred with viral transmission to the mink. As the skunks frequented the mink farm daily, subsequent mink to skunk spread of pH1N1 is considered the most probable route of transmission.

This case report has been accepted for publication in an upcoming volume of Emerging Infectious Diseases (www.cdc.gov/ncidod/eid/).

1. Swine Influenza A (H1N1) Infection in Two Children --- Southern California, March--April 2009. MMWR April 24, 2009/58(15); 400-402

*West Nile virus infection was reported in three horses in BC during 2009. Now that it has been found here, it will most likely reoccur in 2010. It is a preventable disease- **remind horse owners to vaccinate against West Nile virus this spring.***



A case from the Post Mortem Room

Peritoneal pericardial diaphragmatic hernia in a Holstein calf

A 6 week old Holstein heifer calf died suddenly following a 24 to 48 hour history of fever and labored breathing. At necropsy, a foul smelling turbid tan coloured fluid containing fibrin and ingesta was found in the abdominal cavity. Within the thorax, the pericardial sac was markedly enlarged, thickened and opaque. An exudate similar to that observed in the abdominal cavity was also found in the pericardial sac along with part of the left lobe of the liver (Figure 1) and the abomasum. The abomasum had a 2-3 cm diameter ruptured ulcer, explaining the exudate (Figure 2). A peritoneal pericardial diaphragmatic hernia, through which the left lobe of the liver and abomasum had passed, was found.

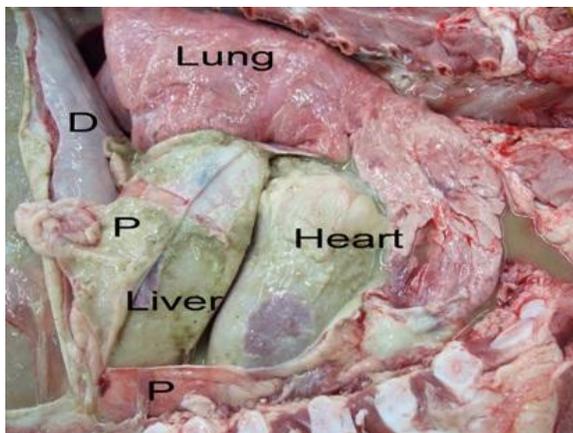


Figure 1. Upon opening the pericardial sac (P), the liver was found beside the heart. The diaphragm (D) is just to the left and above the pericardial sac. Note the lungs above the pericardial sac.

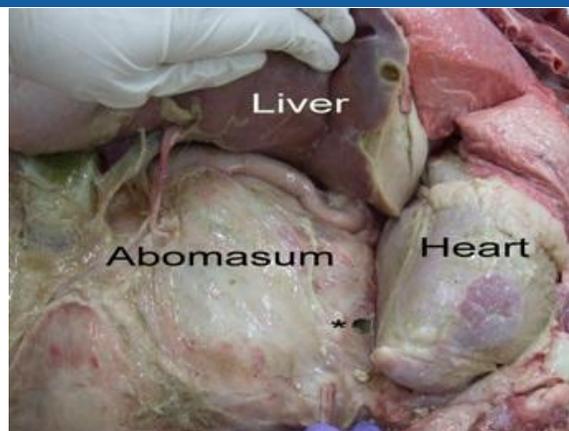


Figure 2. Upon reflecting the liver, the abomasum with perforated ulcer (*) was also found within the pericardial sac beside the heart.

Congenital pericardial diseases are rare in domestic animals. Peritoneal pericardial diaphragmatic hernia is reported to occur as a

result of an embryonal developmental defect of the diaphragm which leads to persistent communication between the peritoneal and herniation of abdominal viscera into the pericardial sac. Most are reported as incidental findings on post mortem examination in dogs and cats, as well as people. Interestingly, this anomaly can remain undiagnosed and asymptomatic for many years. In fact, it is most often found on clinical or post mortem examination requested for other reasons.

The immediate cause of death in the calf was sepsis and shock associated with the ruptured abomasum and a secondary septic peritonitis and pericarditis. It is interesting to speculate whether this calf would have gone on to lead an asymptomatic life as described in pets if the gastric ulcer has not developed and perforated leading to her immediate death. To our knowledge this defect has not previously been reported in cattle.

"What is man without the beasts? If all the beasts were gone, men would die from great loneliness of spirit, for whatever happens to the beasts also happens to man. All things are connected. Whatever befalls the earth befalls the children of the earth."

Chief Seattle-Suquamish Tribe

Poultry Health Extension for Small Flock Owners and Veterinarians

Poultry rearing is an extremely important part of our agricultural landscape. Flock sizes run the gamut, from as little as 1 bird, to the large commercial flocks populated by thousands of birds. Similarly, poultry includes a variety of species and breeds so any flock may have a mix of different chicken, turkey, and/or duck breeds or be single-species, single-breed. Regardless of size or composition, the health and welfare of all flocks is important, both for the individual population and for the overall poultry population in BC.

Information on poultry health is available from a number of sources, including the internet. The validity of this information, however, may be difficult to assess. Scientifically sound information has been readily available for commercial flock owners for many years, but small flock owners and hobbyists have a more difficult task in finding relevant information. To address this gap, the Animal Health Branch has developed outreach programs on poultry health for both small flock owners and veterinarians not trained in poultry medicine. While there are numerous ways in which information can be delivered, our first forays into extension have been in-person training sessions to accommodate some interaction among participants.

Poultry health program for Small Flock Owners:

The Animal Health Centre accepts submissions from poultry owners and veterinarians. In spite of an extremely reasonable cost, submissions from small flocks are infrequent. The health of poultry, as with all animals, is a complex topic and disease occurs only when a number of interrelated events occur. So, while information on recognizing illness in birds would be invaluable for small flock owners, even more important is information on what can lead up to the expression of disease. These topics include management and husbandry, biosecurity, nutrition, disease prevention, and how to respond to suspected illness.

Our first courses were basic health and biosecurity sessions held in partnership with Canadian Food Inspection Agency veterinarians. Two such sessions were convened, one in Abbotsford and a second in Duncan, with excellent participation. Meetings have also been held as a part of regional group meetings, in the Central Okanagan Regional District, and in partnership with the University of the Fraser Valley. All of these events were well attended and participant feedback confirmed our suspicion of a strong demand for information on poultry health.

Veterinary Outreach: Veterinarians have long been identified by the public as a trusted source of information. Veterinary education focuses principally on mammals, and veterinarians who specialize in poultry generally pursue advanced studies to become qualified. Consequently, most veterinarians are not well trained in poultry medicine but many find they are confronted with questions from clients who also own a few chickens. Our veterinary outreach program provides poultry health and medicine courses including avian anatomy, physiology, management and husbandry, diagnostic procedures, common poultry diseases and disease prevention strategies. This increases the veterinary expertise available to provide good, scientifically sound information to poultry owners.

Our first courses, held in Abbotsford and Duncan, were well attended with enthusiastic veterinarians. These all day sessions were heavy on technical information and, by the end of the day, everyone was exhausted. In addition to knowledge and skills, the course gave the attendees credit toward their continuing education requirements making the effort worthwhile.

As a follow-up to the veterinary course, we held hands-on laboratory sessions with avian diagnostic specimens that included solving problems and discussing treatment, control, and prevention strategies. The success of these workshops reinforced that there is a huge demand for poultry health information in the veterinary community.

In summary, poultry extension is now recognized as an important mandate for the Animal Health Branch and we will continue to deliver poultry health information to veterinarians, small flock owners, and commercial poultry producers. If you belong to a group that would like to have poultry health topics covered at your meetings, call the Animal Health Centre at (604)556-3003 or 1-800-661-9903 for more information.

Bovine Viral Diarrhea, a production limiting disease of cattle

Bovine viral Diarrhea (BVD), a common infection in cattle, causes non-specific symptoms including reproductive losses, scours, respiratory disease, ulcers in the mouth and digestive tract, and death. One study in beef cattle reported that every cow infected with BVD can cost producers \$10 to \$60 and that in the feedlot an animal with BVD infection can cost \$7.60 per hundredweight of gain. (The Range Beef cow Proceedings XIX, 2005). In the feedlot, BVD may be the most economically important infection, as it is known to increase susceptibility to bacterial infections including respiratory diseases, and to spread easily among animals.

There are two types of BVD infection; 1) an acute transient infection (Classical BVD) and 2) a persistent (chronic) infection (PI). The factors affecting whether the infection is transient or persistent in an animal include:

- the age of the animal when it is infected
- whether the animal has had a previous BVD infection
- the strain of BVD virus

The most serious form of BVD occurs when a foetal calf is infected through the placenta. When born, these animals shed large amounts the BVD virus throughout their life and they are a major reservoir for infection of other cattle. Persistently infected calves often die before they reach maturity, however some will reach reproductive age, with dams always producing infected offspring and bulls shedding virus continually including in their semen. BVD is also associated with congenital defects in calves, weak calves, abortion, stillbirths, mummified calves and poor conception rates in cows. Vaccination does not help these animals and there is no effective treatment for persistent BVD infection.

Control and Prevention: The goal in managing a BVD infected herd is to control and reduce the spread of BVD, and ultimately to eradicate the virus entirely from the herd. The

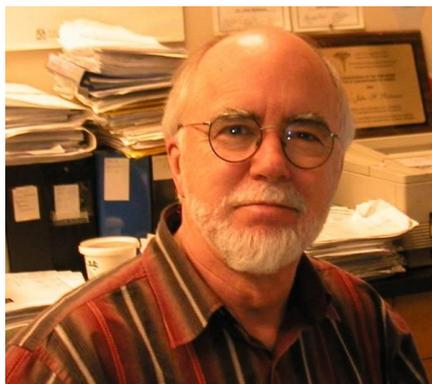
first step is to test the entire herd to identify the persistently infected animals. There are reliable, rapid and economical tests available. Infected animals should be eliminated. Non-infected animals can be successfully vaccinated. Keeping a herd free of infection requires robust biosecurity practices including preventing exposure of uninfected animals to cattle with positive or unknown BVD status, particularly bulls and bred cows. Veterinarians are a good source of information on managing and controlling BVD.

Multiple antibiotic resistant *Enterococcus* spp. found in dead stranded harbor seals

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Multiple antibiotic resistant microbes are serious concerns in human and veterinary medicine with increasing numbers of bacterial isolates resistant to multiple antimicrobials being recovered from livestock, companion animals, terrestrial wildlife, and more recently, within the marine environment. Over the course of the last 10 years, whole animal and tissue samples from 897 harbor seals have been cultured by routine bacteriology and isolates of *Enterococcus* spp have been screened by disc diffusion to assess antibiotic resistance. To date, 12 *Enterococcus* spp isolates recovered from harbor seals have featured resistance to all 8 antibiotics routinely screened by disc diffusion, including Enrofloxacin, Erythromycin, Gentamicin, Lincomycin, Penicillin, Sulfamethoxazole/Trimethoprim, Tetracycline, and Florfenicol. Cluster analysis of *Sma*I-digested *Enterococcus* isolates genomic DNA revealed 11 distinct banding patterns, suggesting multiple selective pressures for antibiotic resistance. Based on review of in house case records, to the best of our knowledge, no *Enterococcus* spp. recovered from livestock or companion animals have featured this extent of antimicrobial resistance. Future genetic analysis of bacterial isolates may provide some insights into the source of antibiotic resistance and possibly, better define gene flow from terrestrial to marine environments. Emergence of multiple antimicrobial resistant bacteria within the marine environment may have important implications for oceans and human health.



Accolades for our Virologist In April 2010, the Western Poultry Disease Conference presented Dr. John Robinson with the Special Recognition Award. “JR is a dynamic scientist whose enthusiasm and passion has overseen the development of an internationally recognized diagnostic virology service for BC’s livestock, pets and aquaculture. From turkeys to shellfish to frogs, to John, the host species really doesn’t matter; it’s the viruses that will always intrigue and challenge him.”

This edition of the Animal Health Monitor was written and edited by: Paul Kitching, Ann Britton, Bill Cox, Jane Pritchard, Stephen Raverty, Mira Leslie

We are always pleased to receive feedback from our readers. Suggestions on future topics and potential contributions are encouraged. You can find past and current issues of these bulletins on our website: <http://www.agf.gov.bc.ca/ahc/>

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