# Animal Health Monitor

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BRITISH COLUMBIA | Ministry of Agriculture

## Articles of Interest:



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## Use of Over-the-Counter Antibiotics in BC Livestock and Poultry by Dr. Brian Radke, Public Health Veterinarian

The Ministry has generated a report on use of over-the-counter (that is, non-prescription) antibiotics. The report is titled "Use of Over-the-Counter Antibiotics in BC Livestock and Poultry, 2002 – 2012" and is available at http://www.agf.gov.bc.ca/lhmr/pubs/otcu_amu.pdf

The BC Ministry of Agriculture issues licences under the BC *Veterinary Drugs Act* and Veterinary Drug and Medicated Feed Regulation for the sale of over-the-counter veterinary drugs. Pharmacies and veterinarians can also sell OTC veterinary drugs and are exempt from the BC Veterinary Drugs legislation licensing requirements. As a condition of licensing, medicated feed licensees and veterinary drug licensees annually submit veterinary drug purchase records to the Ministry. The purchase records include the date of purchase, name of supplier, quantity purchased, the generic name, trade name and name of the manufacturer of the drug.

The report analyzes the annual purchases of veterinary antibiotics by licensed over-the-counter retailers from 2002 to 2012, and does not include purchases by pharmacists or veterinarians. The purchase data is combined with product label information including active antibiotic ingredient concentration, animal species, administration method and usage category (therapeutic, disease prevention, or growth promotion) and also incorporates Health Canada's categorization of antimicrobial class based on importance in human medicine. Antibiotic use is measured on a steady state biomass basis (mg of active antibiotic ingredient/tonne of steady state livestock biomass).

Some of the report's key findings include:

- Over the 11 year span, total antibiotic usage increased by an estimated 11% (approximately 1% annually). This small increase is due to slight increases in the usage of antibiotics categorized as the least important to human medicine. This temporal pattern of usage and the pattern of diminishing use of antibiotics as their importance to human medicine increases is consistent with judicious use of over-the-counter antibiotics.
- Approximately 95% of the antibiotics are administered in feed, 5% in water and all other methods of administration account for less than 1% of total usage.
- Approximately one-third of the antibiotics used have a single label usage category and the majority are labelled for two or more of these usages. The majority of antibiotics used are approved for use in more than one species. Those labelled for poultry, cattle & poultry or poultry & swine accounted for 83% of total usage.
- Antibiotic usage by category of human importance fluctuated; however, the average annual use of categories I, II, III, and IV are 0%, 9%, 42%, 49%, respectively. Health Canada's categorization of antibiotics on their importance to human medicine ranges from very high importance (category I) to products which aren't used in humans and have a low importance (category IV).
- Penicillin G accounted for over half of the category II usage in 2011 and 2012, and 35% of that category's use from 2002 to 2012. The report examines Health Canada's classification of Penicillin G as high importance in human medicine.

In addition to the evaluation of the judiciousness of the over-the-counter antibiotic usage, this data presents interesting evidence about the policy option of requiring prescriptions for all veterinary antibiotics. For example, the data collected from over-the-counter retailers is evidence that prescriptions are not necessary for the collection of antibiotic use data. Also, the evidence that virtually no category I antibiotics are sold in BC's over-the-counter products, combined with the realization that current veterinary prescription products are typically category I or II, means that shifting to a prescription-use-only policy and requiring producers to interact with veterinarians would likely increase the amount of category I products used in animals. An increase in the usage of antibiotics of greatest importance to human medicine would be an unexpected result for a policy that is typically considered to foster judicious use. Consideration should also be given to assessing the judiciousness of human over-the-counter antibiotic use.

## Starvation of Farm Animals in the Midst of Plenty by Dr. Ann Britton, Veterinary Pathologist

Starvation of farm animals is not an event that we would expect to encounter in an industrialized nation such as Canada. Unfortunately, it occasionally happens. When we hear about sensational animal starvation cases in the media, it involves all animals on a farm as a result of abuse, neglect, financial distress and/or mental illness. However, there is another less publicized side to farm animal starvation: feeding mismanagement by well intentioned, responsible owners which leads to the preventable loss of a few vulnerable individuals.

On the surface, feeding farm animals seems entirely straightforward: you provide the feed and they eat it. But the devil is in the details. First, the nutritional requirements must be worked out for each species of animal taking into account their age, sex, weight, time of year and stage of production. Once the diet is established, it must be fed in a manner which ensures that every single animal receives adequate nutrients at every single feeding. This is where the system so often breaks down. It is not enough to put adequate feed out and walk away. Animals must be monitored to ensure they are getting enough to eat. Monitoring involves watching animals eat to ensure they have adequate access to the nutrients they require and assessing body condition score at regular intervals to ensure they are getting enough. When a problem is found, simple solutions such as separating animals for feeding or supplementing with a higher nutrient density feed may be all that is necessary to avoid a case of starvation.

Problems most often arise when animals of different ages or different species are fed together and no one notices that one or two of the younger, growing animals are not getting enough. They are eating every day yes, but they are not getting enough nutrients. They are eating the lesser quality leftovers of the other animals and/or they are being pushed aside too often to get their fill before all the feed is gone. As a result, the more dominant animals are eating too much. Problems are also often encountered when pasture is relied upon for nutrients too late in the season and not enough supplemental feed is fed.

When an animal does not meet its energy and/or protein requirements day after day, it will start to use its reserves to meet its daily metabolic requirements. Owners don't notice any change in behavior because these animals are still eating. Many farm animals have hair/wool coats which are heavy in the fall/winter which can easily mask weight loss. However, owners can readily see that some are getting fat and it appears that all is well. So it comes as a complete surprise when an animal is found dead with no apparent warning. This most commonly occurs in the late fall or early winter during a cold snap, when the additional challenge of generating additional body heat quickly consumes the last available fat stores. Regular palpation of heavy coated or wooled animals to assess body condition score will identify those that are too thin early, when intervention will be most successful.

Good information on nutrition and feeding management is readily available on the internet. Websites maintained by university extension groups and government agricultural or livestock producer agencies are excellent sources of information for owners.

As an example, I encourage owners to have a look at the information on diet and feeding management, including body condition scoring, at the following website:

http://extension.oregonstate.edu/sorec/sites/default/files/GoatNutrition0107.pdf

Other excellent websites include:

http://www.ag.auburn.edu/~chibale/an16sheepfeeding.pdf

http://hccmpw.org.uk/medialibrary/publications/Practical%20sheep%20nutrition_1.pdf

http://www.uky.edu/Ag/AnimalSciences/pubs/asc161.pdf

***"I couldn't possibly have starved my animal because some of them are so fat"***

***Armed with good dietary and feeding management skills, owners can ensure that every animal meets its full potential.***

***The Animal Health Centre is here to assist livestock owners in producing and maintaining optimal health for their animals.***

## Sample Submission Guidelines—Serology by Dr. Tomy Joseph, Veterinary Virologist

Serological tests can be used to determine: (1) if an animal has been infected by a particular pathogen, (2) if a specific pathogen is linked to a clinical disease and (3) if an animal has elicited an antibody response following vaccination.

A single serum sample from an animal provides some indication of exposure to a pathogen at a point in time. However, paired serology on 5-10 age matched cohorts including clinically affected and apparently healthy animals is necessary to assess the potential disease dynamics within a group of animals. Acute and convalescent-phase sera collected from the same animal constitute paired sera. The acute-phase serum is taken as soon as the animal first develops clinical signs and the convalescent-phase samples usually at least 2 weeks later. Paired sera should be submitted together.

Enzyme linked immunosorbent assay (ELISA), indirect immunofluorescent assay (IFA), Agar Gel Immunodiffusion (AGID), hemagglutination inhibition (HI) and virus neutralization (VN) are the major serological assays performed at the Animal Health Centre (AHC). Additionally, AHC performs radial immunodiffusion (RID) assay for total antibody quantification in cattle and horses as well.

Quality of serum samples submitted for serological assays can have a significant impact on final assay results. For example, hemolyzed or lipemic serum can lead to unreliable ELISA and IFA results. **Please use the following guidelines to submit serum samples to ensure timely service and accurate test results.**

1. Use red-top serum tubes or yellow-top serum separation tubes for collection. *Do not use EDTA (lavender-top), heparin (green-top) or citrate (blue-top) tubes.* Ensure that tubes have not expired.
2. After collection, keep the blood samples at room temperature until serum has separated from the clot (30-60 minutes).
3. Centrifuge at 1100-1300 rpm for 15 minutes.
4. Submit serum only. Even if serum separation tubes are used for collection, please pour/draw off serum into separate clean tubes. *(Freeze and thaw cycles during shipping and/or storage can lead to hemolysis if serum is not separated from the clot).*
5. Do not submit serum samples that are grossly hemolyzed (dark-red color) or lipemic (milky appearance).
6. Refrigerate serum samples at 2–7° C for up to 3–5 days.
7. If samples need to be stored for a longer period, serum should be removed from the clot and frozen at -20°C.
8. Submit a minimum of 2 ml serum for large animals. In the case of poultry 0.5ml serum must be submitted from each bird.
9. Be sure to close tubes tight to avoid leakage.
10. Outside of tubes must be clean and dry to avoid contamination. Label the tubes with ID numbers using permanent marking pen on the side of the tube.
11. Place the tubes with serum in consecutive numerical order in styrofoam or cardboard boxes designed to hold the tubes. Do not submit in bags.
12. When submitting more than 20 samples at a time, please send an MS Excel file with Animal IDs by e-mail (please call 604-556-3003 for e-mail address). Enter animal IDs in a single column identified as "Animal ID" and the AHC report will contain IDs as entered in this column. Place samples in the same order in the rack/box as in the MS Excel file.

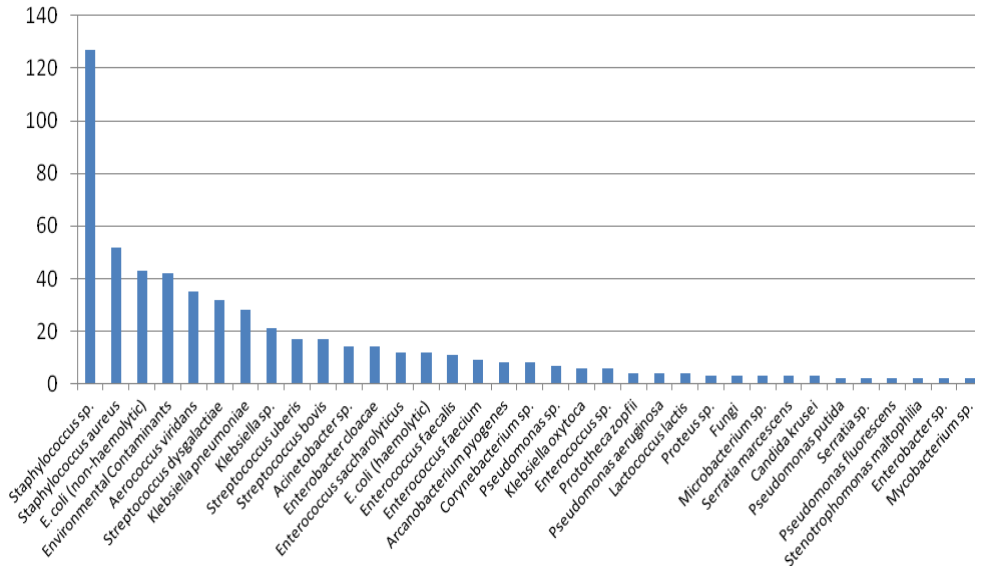
Shipping:

13. Pack box snugly in a foam cooler as follows and ship refrigerated along with completed AHC submission forms and a printed list of sample ID numbers. Include the date of collection and method of storage on the submission form.

    - Place several freezer gel packs in the bottom of the cooler.
    - Cover with one layer of crumpled packing paper or bubble wrap.
    - Place the box containing the sample tubes on top of the packing paper.
    - Fill the cooler with more packing paper to prevent samples from moving during shipping.

## Milk Culture Results by Dr. Jane Pritchard, Director, Plant and Animal Health Branch

January 1—December 31, 2013—Results of milk cultures sorted by frequency of isolation to a minimum of two times.




* The following isolates were single occurrences during the period of January 1-December 31, 2013, and not included in the chart above: Actinomyces sp., Aerococcus sp., Aerococcus urinae, Aeromonas hydrophila, Brevibacterium sp., Candida sp., Chryseomonas sp., Citrobacter sp., Corynebacterium bovis, Enterobacter amnigenus, Enterobacter cowanii, Kocuria sp., Lactococcus sp., Serratia liquefaciens, Streptococcus agalactiae, Streptococcus orisratti, Streptococcus sp., and Trichosporon sp.

Between January 1 and December 31, 2013, 933 milk samples (182 submissions) were received for culture and sensitivity at the Plant and Animal Health Centre. Out of the 933 samples submitted, no bacteria was isolated in 419 samples.

| Resistance by Isolate | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | amp | kf | ob | e | xnl | p10 | pyr | sxt | tet | # of isolates tested |
| Staphylococcus sp. | 9% | 0% | 11% | 3% | 4% | 10% | 11% | 3% | 4% | 127 |
| Staphylococcus aureus | 8% | 0% | 2% | 2% | 0% | 6% | 6% | 0% | 2% | 52 |
| E. coli (non-haemolytic) | 60% | 47% | 63% | 63% | 9% | 63% | 63% | 5% | 14% | 43 |
| Aerococcus viridans | 17% | 0% | 51% | 9% | 0% | 9% | 9% | 31% | 40% | 35 |
| Streptococcus dysgalactiae | 3% | 0% | 0% | 13% | 0% | 0% | 3% | 6% | 38% | 32 |

| | | | | |
|---|---|---|---|---|
| amp – ampicillin | ob – cloxacillin | xnl – excenel | pyr – pirlimycin | sxt – sulfamethoxazole/ |
| kf – cephalothin | e – erythromycin | p10 – penicillin | tet – tetracycline | |

# Staff Profiles

## Sean Byrne, Microbiologist Retires

Sean Byrne has been the head of the Animal Health Centre Microbiology Laboratory since 2001.

He came to us from the Microbiology lab at the BC Centre for Disease Control, which he joined in 1985. Sean was the person that led us into the age of molecular testing and PCR. A concept we have embraced and run with, a concept that we hope provides a higher level of accuracy and a wider range of tests to serve the agriculture sector.

We have Sean to thank for this.

Sean has also been our Quality Manager and supported our accreditation with the American Association of Veterinary Laboratory Diagnosticians, and brought us to the door step of our ISO 17025 accreditation audit, happening later this spring.

We are working at replacing Sean, but in the mean time, Dr. Tomy Joseph, our Veterinary Virologist will be supporting the Microbiology lab. When we have a new manager for the Microbiology lab, we will let you know.

## Welcome to Dr. Hein Snyman, Veterinary Pathologist

Dr. Hein Snyman, Veterinary Pathologist, joined the Animal Health Centre on December 2, 2013. Hein will be covering for Dr. Chelsea Himsworth during her maternity leave until November 2014.

Hein was born in South Africa and completed his BVSc (Bachelor of Veterinary Science) degree from the University of Pretoria in 2008.

After spending some time in private practice in South Africa as an exotics and wildlife veterinarian, and armed with a deep rooted interest in veterinary pathology, he joined the Department of Pathobiology at the Ontario Veterinary College in Guelph as a graduate student.

He completed his DVSc (Doctor of Veterinary Science) degree in Anatomic Pathology in November 2013 and also successfully completed the certification examination of the American College of Veterinary Pathologists (ACVP) in September 2013.

Joining Hein in Abbotsford are his wife, Roberta Cassol, and their two children Zander and Myra.

Hein is very excited to work with the Ministry of Agriculture and is very happy to be here.

He has an active interest in hiking and fishing and is excited to explore the vast mountain ranges, forests, streams and rivers of BC with his family.

Hein also enjoys participating in at home activities, including being an assistant fireman to Zander and a co-builder of princess castles with Myra.

## 16th Annual Pacific Agriculture Show
## January 30, 31, February 1, 2014
## Abbotsford Tradex

The 3-day event was attended by over 7,500 visitors and there was a record turnout of 280 exhibitor booths. There was so much interest in exhibitor space that 30 companies were left on a wait list.

The Ministry of Agriculture booth was represented by staff from the Plant and Animal Health Branch, Sector Development Branch, Food Safety and Inspection Branch, and the Innovation and Adaptation Services Branch, at the 16th Annual Pacific Agriculture Show.


Pictured on far left, AGRI staff Orlando Schmidt, Sector Development, and on far right, Vippen Joshi, Plant and Animal Health.

Pictured to the right, on far left side, AGRI staff David Poon, Innovation and Adaptation Services Branch.

# Guidelines for Collection and Submission of Swabs for Virus Isolation and PCR

by Dr. Tomy Joseph, Veterinary Virologist

Proper collection and handling of diagnostic specimens are critical for the success of virus detection and virus isolation techniques. Since peak virus titers are usually present at the onset of clinical signs, diagnostic specimens for virus detection and virus isolation should be collected immediately after the animal first develops clinical signs.

For best results, swabs must be aseptically collected in virus transport medium, stored at 4°C and transported immediately to the laboratory. Samples that cannot immediately be transported to the laboratory should be stored at 4°C for not more than 2-3 days. Samples must be kept frozen at –70°C or lower for long term storage. Fresh tissues should also be submitted whenever possible in a sterile, leak proof container to facilitate virus isolation and perform additional tests if needed.

Please use the following guidelines for proper collection, packaging, storage and transport of swabs for virus isolation and viral PCR tests.

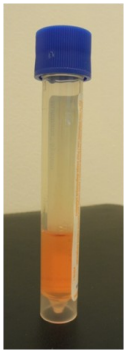
**Materials needed:**

- Dry polyester or Dacron swabs on plastic handles.
- Collection tubes with universal virus transport medium (2-3ml) to prevent swabs from drying (Eg:- Starplex™ Scientific Multitrans™ Collection and Transportation Systems from Thermo Fisher Scientific Inc or VWR or Universal Transport Medium, UTM™ from COPAN Diagnostics Inc).

  (***DO NOT*** *use cotton swabs, swabs with wood or paper handles or swabs in bacterial transport media and agar. Residual bleach and other chemicals in cotton swabs and wooden handles and agar in the bacterial transport media can be inhibitory to PCR and may inactivate viruses).*
- Freezer packs – place in freezer.
- Zip lock bags and PAHC submission form.

**Procedure:**

1. Pre-label collection tubes with black permanent marking pen.
2. After thoroughly swabbing the area of interest (avoid contamination outside the target area), place the swab in virus transport fluid inside collection tube and swirl vigorously for 3 seconds.
3. Squeeze the liquid off the swab (press and roll) along the inside wall of the tube, discard swab into a disinfectant solution.
4. Securely close the screw cap (they can leak if over-tightened or if threading is misaligned).
5. Clean outside of each tube and seal in plastic zip lock bags (double bagging is recommended), store collection tubes at 4°C. Do not freeze.
6. Pack samples snugly in a foam cooler as follows and ship refrigerated within 24 hours:
   - Place several freezer gel packs in the bottom of the cooler.
   - Cover with one layer of crumpled packing paper or bubble wrap.
   - Place the zip lock bags containing the sample tubes on top of the packing paper.
   - Fill the cooler with more packing paper to prevent samples from moving during shipping.
   - Complete submission form and sign**.** Submit the paper work in a separate plastic zip lock bag. Tape to inside of cooler lid.



Normal virus transport medium with 'pink color'

Virus transport medium with 'yellow color' indicating bacterial growth. **DO NOT** use if fluid is yellow

Demonstration of proper technique for collecting swabs from birds can be watched from the following websites.

http://www.cfsph.iastate.edu/video.php?link=tracheal-swabs

http://www.cfsph.iastate.edu/video.php?link=oropharyngeal-swabs

http://www.cfsph.iastate.edu/video.php?link=cloacal-swabs

## 12th Annual BC Zoonoses Symposium by Dr. Brian Radke, Public Health Veterinarian

The 12th Annual BC Zoonoses Symposium was held November 25, 2013 in Surrey, BC. This collaborative, interdisciplinary symposium provides an opportunity for professionals from across BC to gather, network and learn about disease issues affecting animals and humans. The symposium is a partnership of the BC Ministry of Agriculture and the BC Centre for Disease Control. The BCCDC Foundation for Population and Public Health was a gracious sponsor of the symposium.

The symposia include presentations on a wide variety of One Health Topics. The symposium included information on antimicrobial use in animals, vector-borne zoonotic diseases, and zoonoses associated with a variety of wildlife species, including city rats! A zoonotic outbreak case study was well-received as a way to stay awake following the free lunch. The agenda of the symposium is available at http://www.bccdc.ca/dis-cond/types/Zoono-tic/12thZoonotic+DiseaseSymposium.htm. (Agendas and presentations from previous symposia are also available at that website.)

With over 100 attendees, the symposium was well attended. The audience included public health inspectors, public health physicians, public health researchers, students and veterinarians. Most of the veterinarians are engaged in public practice and a goal is to increase attendance by private practitioners and animal health technicians.

There typically is no registration fee for the symposia, but registration is required for planning purposes.

Historically, the symposia have been held in November; however, the 2014 symposium is tentatively scheduled for August. Details of the 13th Annual BC Zoonoses Symposium will be included in future editions of the Animal Health Monitor.

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http://www.agf.gov.bc.ca/ahc/AHMonitor/index.html

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