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Communicating Effectively on Animal Welfare

Tim Blackwell, Veterinary Science and Policy Unit, OMAF and MRA

As veterinarians we are considered experts in animal welfare by the public. The education, experience, and professional oath veterinarians take regarding their responsibility to relieve animal suffering make us an obvious resource when animal welfare issues arise. Unfortunately veterinarians often appear ill-prepared to discuss animal welfare even though the public expects such discussions to be second nature to us. Why is this?

Animal welfare is an emotional issue and veterinarians are scientists by nature and by training. Science, however, does not provide answers to the majority of animal welfare questions. For example, the housing of sows in individual stalls is a concern for consumers. One industry response to this concern has been to fund scientists to study sow stalls. These scientists measure cortisol levels, health, behaviours and productivity in sows housed in gestation stalls and in group housing. If, after two or three years of intense study, the scientists conclude that sows prefer the freedom to move about their environment, the public views these scientists as wasting time and money because their conclusion is obvious to the public. If the scientists conclude that keeping pregnant sows in crates makes no difference (perhaps based on measuring production parameters), the public concludes that these scientists are either stupid or on the take. Using a scientific approach to determine if animals are suffering generally makes veterinary public-relations problems worse.

To address an animal welfare question, we need to first determine whether the activity in question causes unnecessary discomfort. In the 1970's, the swine industry began to use sow stalls to house pregnant females. Previously, pregnant sows had been housed in pens containing two to four sows that were fed once or twice a day. This resulted in fighting between sows and unequal feed distribution. Sows were often injured and were either overweight or underweight. Gestation stalls, although more expensive than small pens, improved both welfare and productivity. In the 1970's, the discomfort caused by the close confinement of gestation stalls was **necessary** to provide safe, clean places for gestating sows to rest and receive adequate nutrition. Progress in understanding sow behaviour, combined with new

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housing designs resulted in safe, clean resting places, equitable feed distribution, and freedom of movement. Today the close confinement created by sow stalls is an **unnecessary** discomfort.

Similar reasoning can be used to address other welfare questions, such as the close confinement of laying hens or castration and dehorning of ruminants without pain control. For most welfare controversies the question is not, “Is there discomfort?” but rather “Is it necessary?” If the discomfort is currently unavoidable due to a lack of alternatives, we are obligated to work to find alternatives. We should not spend time studying whether confinement that prevents a hen from stretching her wings or surgical excisions performed without analgesia are

discomforting. Such efforts make us appear foolish in the eyes of the public. Observations by both veterinarians and the public regarding animal discomfort are generally accurate.

Veterinarians have taken an oath to relieve that discomfort. The fact that we don’t have an answer for every welfare issue today does not change the fact that it is our obligation to relieve suffering in animals. If we endeavor to make domestic animals more comfortable in the same way we strive to make them more productive, or to make foods of animal origin safer, our communication problems will be over. If we insist on making excuses for animal discomfort, our communications problems will continue.

Driving Change in Veterinary Extension—First You Need to Understand the Reasons for Resistance.

Kathy Zurbrigg, Veterinary Science and Policy Unit, OMAF and MRA

There are many definitions of “extension” or “extension education”. Simply Google the words and a plethora of explanations will come up each with their own adaptation depending on the discipline. One common thread is that the ultimate goal of extension is to share knowledge. With new knowledge comes change and, commonly, with change comes resistance to change. From new management strategies or housing designs to improvements in animal health and welfare to new record keeping/surveillance systems, implementing change can be a long and frustrating battle for extension personnel that are not endowed with an abundance of patience.

While my experience with extension education is limited to veterinary medicine and livestock management, it seems that other fields of extension education also experience resistance to change. Rosabeth Moss Kanter of the Harvard Business Review Blog Network lists ten universal reasons why people resist change ⁽¹⁾. She also states that the key to eliciting change is to understand these sources of resistance and then strategize around them. While a few of these seem more pertinent to challenges in veterinary extension, all are applicable.

1. **Loss of face-change by definition is a departure from the past.** *People associated with the old practice or item that is to be changed, are likely to be defensive about it.* This one is particularly applicable to veterinary extension and the resistance experienced to change of long-established management practices. From group gestation housing for sows to free-choice or increased feeding of calves, when giving reasons for the adoption of a new management system there is an implication that something must be “wrong” with the previous system. Extension educators must empathize; we would also get defensive if told that for years we had been doing our job incorrectly or in an uncaring manner.
2. **More work-change is indeed more work.** If nothing else, the implementation of the change is more work than keeping things status quo. Feeding calves 3x a day in the winter adds another task to complete during the day. A commitment to separating calves from the cow environment shortly after birth means night-time monitoring and the creation of a new area for calves to be kept before they go to a hutch or calf pen. Everyone is busy; few of us need more work so it is easy to understand this reason to resist change.

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3. **Sometimes the threat is real**-*Change is resisted because it can hurt.* Change can be costly both financially and emotionally. It might mean new equipment, new staff or a major renovation to a barn. If the financial costs are too great, producers may opt to leave agriculture altogether.
 4. **Loss of control**-*change interferes with autonomy and can make people feel like they have lost control.* The Ontario sheep industry is growing rapidly. Producers trying to meet the growing demand are expanding their flocks. Industry pressure to follow improved biosecurity standards and best management practices has many producers feeling like they are no longer the ones making decisions about their farm.
 5. **Ripple effects**-*Like tossing a pebble into a pond, change creates ripples, reaching distant spots in ever-widening circles.* One major challenge currently facing swine producers in North America is the switch from crated to group gestation housing. Producers only have to look to the European Union (where group housing is now required by regulation) to hear about the next initiative for change to the industry (e.g., decreased use of antibiotics, use of analgesia at castration). Many resist the change to group housing based on the fear that they are on a “slippery slope” and that an industry-wide adoption of gestation crates will impact decisions regarding other consumer-driven issues in the industry.
 6. **Excess uncertainty**-*if change feels like walking off a cliff blindfolded, then people will reject it.* This applies particularly to the adoption of new technologies (i.e. robots for milking or feeding or expensive renovations to housing). Where is the guarantee that milk production will go up or that lameness or mastitis issues will decrease with new more comfortable stalls? Perhaps the comfort of a sow will be improved if she is in a pen versus a crate, but will there be a payoff in production to offset the cost of the renovation?
 7. **Surprise**-*change imposed on people suddenly with no time to get used to the idea or prepare for the consequences, is likely to be resisted.* Recently Russia banned the import of beef, pork and turkey if it is not certified free of ractopamine, a move that will effectively block meat exports from the USA where a processor testing program is not currently in existence. There is much resistance to this change particularly in the USA but ultimately processors need to decide if the Russian market is worth the extra effort.
 8. **Everything seems different**-*we are creatures of habit and habits are comfortable. Lots of change all at once can be distracting, confusing and discomfoting.* Changes to milking procedures are frequently resisted. Getting producers to start stripping cows prior to milking, a widely recommended practice that is proven to improve somatic cell count (SCC) and milk letdown, is a good example. The established milking routine becomes so engrained that experienced producers and employees can do it without thinking about it. Changes to one or more aspects of such a practiced routine means each step requires thought and the whole process is slowed down. In short, it throws us off our game.
 9. **Concerns about competence**-*Can I do it? Change is resisted when it makes people question their abilities.* Changing the housing of pregnant sows from individual gestation stalls to group pens can cause producers to question their stockmanship skills. “What if I can’t sort one out of the pen?” “What if they start fighting?” Imagining worse case scenarios is easy to do but seldom realistic or advantageous. The move to a well-designed group housing system for sows actually reinforces the producer’s realization of just how good a stockperson he/she is.
 10. **Past resentments/biases**-*the ghosts of the past are always lying in wait to haunt us.* Everyone knows someone who took a leap of faith, made a change and failed. Alternatively a neighbour or relative tried that 20 years ago and “it didn’t work then”. Regardless of whether the memory is more myth than truth, or if the “change” has been improved in the last 20 years, it is a valid bias in the eyes of the resistor.
- Anyone involved with veterinary extension has probably had days where the resistance to change is so great that we would like to throw in the towel.

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Extension educators should understand the basics behind how our audiences react to change and seek to minimize their discomfort if we are to see change realized. Diagnosing the sources of resistance is the first step toward good solutions.

1. *Moss Kanter, R. Ten reasons people resist change. Harvard Business Review Blog Network. Sept 25, 2012. <http://blogs.hbr.org/kanter/2012/09/ten-reasons-people-resist-chang.html>*

Bold and italic text in points 1-10 were taken directly from the original article by Kanter as referenced above.

Calf Health Project

Jason Brownridge, Milverton-Wellesley Veterinary Clinic, Wellesley, Ontario

This winter, our clinic's dairy team decided to foster the development of a calf health project, with the help of a volunteer student (and DVM hopeful), named Momoko Kawai. Our goals were to: (i) Uncover calf rearing protocols within our clientele; (ii) Collect information pertinent to calf health, which producers often find time consuming and difficult to collect; and (iii) Educate and provide benchmarks for future improvement. From a practice benefit standpoint, the project encouraged all of our dairy veterinarians to become more knowledgeable about calf rearing.

We offered a two to three-hour farm visit, free of charge, to any producers who were interested. We began the visits by completing an in-depth questionnaire about calf rearing, from birth to weaning. We usually performed some environmental monitoring, measuring the calf barn temperature, humidity, light, and in some cases, used a smoker to demonstrate drafts. In certain cases, we left a Hobo data logger on farm for 2-3 weeks to take hourly

measurements of temperature and humidity. We also took weight measurements using heart girth tapes, and measured calf heights. We plotted these on a graph to show the producer how they were doing. If the producer desired, we also measured breeding age heifers to provide them a benchmark for overall heifer growth. Blood samples were taken from calves less than seven days old to measure colostral immunity. Milk replacer preparation was observed and a gram scale and thermometer were used to demonstrate any refinements needed in their mixing practices. We also brought along a Brix refractometer to demonstrate how this simple piece of equipment can determine colostrum quality.

Overall, the project was very well received by the participants, with several producers suggesting that we make this assessment an annual part of their herd health service (for a fee!). If you would like more information about the project, please feel free to contact me at jasonbrownridge@hotmail.com.

“Practice Tip” - Painless Lidocaine!

Dr. Joe Snyder, a practitioner in the state of Oregon, recently shared a tip about how he makes lidocaine injection less painful for animal use. Dr. Snyder buffers his lidocaine with bicarbonate in the syringe immediately before use. He has found a 1:9 ratio of 8.4% bicarbonate to 2% lidocaine (one mL of bicarbonate to 9 mLs of lidocaine) to be the most effective. The buffering must be done as the lidocaine is used. If bicarbonate is added to the bottle ahead of time it will cause the lidocaine to precipitate.

Much of the pain of lidocaine injection is due to the burning sensation that is caused by the product's low pH (between 3 and 4). This low pH is required to keep the lidocaine in solution.

Dr Snyder has successfully used the buffered lidocaine for blocking calves for dehorning, doing paravertebral and inverted “L” blocks for cattle surgeries, castrations, lancing of abscesses and all sorts of similar activities. It has been useful too for laceration repair in all species, including horses. He reports that the buffering of the lidocaine may shorten the time from injection to full effect (a good thing), but may also result in the block wearing off a bit sooner (not necessarily a good thing).

One important use to keep in mind - a small bleb of buffered lidocaine under the skin prior to insertion of a larger 12 gauge needle for pentobarbital injection for equine euthanasia can also make this sad task much smoother for the veterinarian, the horse and the owner.

Thank you to Dr. Snyder for providing this tip and allowing us to share it with you.

Passive Disease Surveillance: Balancing Cost, Timeliness and Accuracy

Tim Blackwell, Veterinary Science and Policy Unit, OMAF and MRA

Veterinarians and producers rely on the timely reporting of new disease occurrences. Disease reporting systems based on voluntary reporting of disease conditions (passive surveillance) can identify new disease events at very low cost. While timeliness and accuracy are attractive advantages of passive surveillance, such surveillance systems may misrepresent actual disease prevalence.

For example, what is reported as the first case of transmissible gastroenteritis (TGE) in several years may actually be the first case of TGE infection in several years in a non-immune herd. The high mortality form of TGE (classical TGE) has become rare since the emergence and spread of respiratory corona virus in the 1980's. Immunity resulting from infection with respiratory corona virus provides cross-protection against TGE. When a classical outbreak of TGE occurs in a swine herd today, it more likely indicates a lack of respiratory corona virus exposure rather than a re-emergence of TGE. Passive surveillance for TGE most often captures cases of classical (high mortality) TGE and will not determine the actual prevalence of the virus. It may indicate how prevalent naïve herds are in a region along with how effective routine biosecurity practices are.

Detection biases strongly affect passive disease surveillance programs. Recent reports of the isolation of a new strain of *Brachyspira* that was previously unknown in pigs resulted in an increase of testing for all *Brachyspira* in finishing pigs. This testing identified the classic *Brachyspira hyodysenteriae* and other less pathogenic *Brachyspira* species. These isolates, however, cannot be considered new infections as these organisms have been endemic in the province for years. *Brachyspira* spp. have not been isolated in the recent past, likely because routine culture procedures cannot identify it and specific testing for the organism was performed only

on request. A bacterium such as *Brachyspira* would not be expected to disappear from a region without a concerted effort to eradicate it. An increase in specific testing, therefore, would be expected to produce one or more “new” isolations of the bacterium.

Advances in genomics are occurring at a rapid pace and allow for the differentiation of viruses and bacteria that were impossible to differentiate 10 years ago. For example, an isolate of swine Influenza virus that previously would have been reported as swine influenza H1N1 is now defined in terms of the origin of each of its genetic components. Such precisely defined mutations and recombinations are more about the sophistication of the new detection methods than the nature of the virus. This new form of categorization based on tests for viral components does not necessarily indicate that anything new or unusual is happening with the virus.

Passive disease surveillance systems are inexpensive to initiate and maintain compared to active, structured surveillance programs. However passive surveillance programs can lead to inaccurate representations of disease prevalence due to their voluntary nature and inherently biased sampling patterns. Passive surveillance is particularly ineffective at identifying the prevalence of endemic infections. As the Canadian livestock industry becomes ever more dependent on export markets for the sale of both live animals and animal products, timely and accurate disease surveillance systems will become an integral part of ensuring the security of these markets. Therefore the identification of new, emerging, or re-emerging pathogens should be reported in context to ensure that sporadic identification of low prevalence endemic diseases, are not perceived to be “new” outbreaks in a region or country.

New Disease Reporting Requirements for Laboratories and Veterinarians

Tania Sendel, Veterinary Science and Policy Unit, OMAF and MRA

Laboratories and veterinarians are required to report certain animal health hazards to the Ministry of Agriculture and Food and Ministry of Rural Affairs (OMAF and MRA) in accordance with a new hazard-reporting regulation that came into effect on January 1, 2013 under the provincial *Animal Health Act*, 2009.

Third-party veterinary diagnostic laboratories operating in Ontario are required to report positive test results for a list of immediately notifiable diseases as they are detected, and a list of annually notifiable diseases to be reported once a year.

OMAF and MRA does not have jurisdiction over laboratories in other provinces. However, a veterinarian practicing in Ontario who sends a sample to a laboratory located outside of Ontario, will be required to report that laboratory's positive findings of any immediately notifiable diseases to OMAF and MRA.

Reliable and timely reports provide an early warning of the potential spread of animal diseases. The immediate reports will be used by OMAF and MRA to assess how much risk each incident poses and the appropriate response level necessary to minimize the spread or impact. The annual reports will be used to identify new and emerging trends and to assess the need for preventive programs.

The regulation also requires veterinarians to report findings of a very serious nature. For example, such a finding may involve animals on multiple premises, or a serious risk to human health. This requirement is intended to capture situations where a veterinarian is concerned about a possible new and emerging disease or syndrome, or a hazard such as contaminated animal products entering the food chain.

The new provincial reporting requirements do not affect existing federal reporting requirements to the Canadian Food Inspection Agency. The federal government remains the lead authority for

New Reporting Requirements

Laboratories and veterinarians using out-of-province labs must report positive findings of *Immediately Notifiable Hazards* within 18 hours of the laboratory finding.

Laboratories must report positive findings of *Periodically Notifiable Hazards* for the previous calendar year electronically by January 31.

Reports can be emailed to OCVO-Reportable-Notifiable@Ontario.ca

Veterinarians can report a situation of serious risk by calling the Agricultural Information Contact Centre at 1-877-424-1300. Veterinary reports of serious risk are due within 18 hours of becoming aware of the risk.

For more information on the new Animal Health Act regulations, please visit www.ontario.ca/animalhealth

addressing foreign animal diseases, as well as a number of other high-profile endemic animal diseases that are designated as federally-reportable. The new reporting requirements will allow OMAF and MRA to provide a coordinated response if required.

Owners who incur expenses or losses as a result of orders issued under the Act may be eligible for compensation. A new compensation regulation also came into effect on January 1, 2013.

The compensation regulation encourages animal owners to participate in the animal health response system, and helps to ensure the timely reporting of incidents. It gives the Minister the discretion to provide compensation for the costs of destroying animals or things as well as disposal, cleaning and sanitation. Maximum amounts payable for animals are given in the regulation and are based on values used by the Canadian Food Inspection Agency.

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The Ontario *Animal Health Act* has been in force since January 2010. It is a tool that OMAF and MRA uses to prevent, detect and respond to animal health hazards in the province, including those with public health implications.

An OMAF and MRA veterinarian is on call seven days a week to assess reports received through the Agricultural Information Contact Centre (1-877-424-1300). For more information on the new reporting requirements, a listing of immediately notifiable and periodically notifiable diseases, and instructions on how to report, please go to www.ontario.ca/animalhealth

Estimating the Impact of Caprine Arthritis Encephalitis Virus on Milk Production

Jocelyn Jansen, Veterinary Science and Policy Unit, OMAF and MRA

Caprine arthritis encephalitis virus (CAEV) is a small ruminant lentivirus that is common in dairy goats but can also occur in meat and fibre breeds. The virus infects monocytes and macrophages and results in a chronic lymphoproliferative inflammatory response that affects joints (arthritis), lungs (interstitial pneumonia), mammary gland (interstitial mastitis) and the brain (leukoencephalomyelitis). There is no cure for this disease.

In a recent Ontario study, 45 goat herds (30 dairy and 15 meat) were recruited (non-random sample) and up to 20 goats per farm blood tested for CAEV antibodies using the IDEXX ELISA CHEKIT CAEV/MVV test. The herd-level prevalence of CAEV was 90% (27/30 had ≥ 1 seropositive animal) among dairy goat farms and 53% (8/15) among meat goat farms. Eighty percent of the 482 dairy goats tested positive for antibodies to CAEV, while 17% of the 225 meat goats tested positive.

Previous studies have found that CAEV seropositive animals are less productive. In a 2013 retrospective study, 4533 Murciano-Granadina dairy goats from 22 herds in Spain were followed over one lactation to determine how their serological status to CAEV impacted milk production. The seroprevalence was 18% (807/4533): 0% of goats in five herds, 1-2% in six herds, 7-9% in two herds, 19-35% in six herds, 52-60% in two herds, and 100% in one herd.

Across the 22 herds, seronegative does had statistically higher ($P < 0.05$) mean milk yields (446 vs. 374 L), longer lactations (218 vs. 204 days) and higher percentages of fat (5.15 vs. 5.02 %) and lactose (4.84 vs. 4.74 %), compared to seropositive does. The daily milk yields for seronegative and seropositive does were 1.96 L and 1.77 L, respectively. This translated to a 10% difference, which ranged from 5% to 17%. Losses were greater with higher lactation numbers, which is expected given the slow nature of the infection and the likelihood of repeated exposure over time.

Given the intensive nature of the Ontario dairy goat industry, the high prevalence of CAEV seropositivity discovered in the Ontario study and the expected impact on milk production and herd longevity, it is important that veterinarians work with and encourage producers to implement control measures that minimize or eliminate infection.

Stonos N et al. Seroprevalence of caprine arthritis encephalitis virus (CAEV) in Ontario goat herds. Small Ruminant Research Day, January 31, 2013, Guelph, ON.

Smith MC, Sherman DM. Goat Medicine, 2nd Edition. Ames, Iowa: Wiley-Blackwell, 2009.

Martínez-Navalón B et al. Quantitative estimation of the impact of caprine arthritis encephalitis virus infection on milk production by dairy goats. The Veterinary Journal 2013; in press.

Step-down Weaning and Weight Loss in Dairy Calves

Neil Anderson, Veterinary Science and Policy Unit, OMAF and MRA

Step-down weaning describes a method for removing milk from the diet of dairy calves. Although promoted as a kinder, gentler and less stressful weaning protocol, this may not be the case. A recent research paper ⁽¹⁾ shows data from step-down weaning. The researchers' calves on restricted milk diets (5 litres per day) gained weight during weaning. However, their calves fed ad lib milk replacer, and undergoing the same weaning method, lost weight. Fortunately, the researchers weighed their calves immediately before and at the end of weaning. Otherwise, when comparing only birth and "end of weaning" weights, the weight loss would have gone undetected. We need at least three weights to monitor calf performance and to assess claims about feeding and weaning programs.

All calves were fed 22% crude protein (CP) and 18% fat Shur-Gain High Performance Milk Replacer (NutraCo Canada Inc., Guelph, ON, Canada) mixed at a rate of 150 grams (g) into a litre (L) of water. Formic acid [The Acidified Milk Solution (9.8% formic acid); NOD Apiary Products Ltd., Frankford, ON, Canada] was added to acidify the milk replacer to a target pH between 4.0 and 4.5 to prevent microbial growth over the course of the day. The starter ration contained 20% CP.

The researchers weaned their experimental and control calves during week seven by reducing milk intake by 25% of total intake in three steps. Intakes for ad lib fed calves are shown in **Figure 1**.

For the ad lib calves, each step in weaning represented a decrease of 600 g of milk powder or about 132 g of CP in their daily intake. To replace the solids removed by the reduction in milk powder, the ad lib calves would need to consume 660 g of 20% CP starter. The data in **Figure 2** show clearly that the ad lib calves did not increase their starter intake to this amount and they lost weight. It appears that the ad lib calves increased their intake of starter by about 150 g (e.g., about 30 g CP) each day during the seven-day weaning period. This daily increase in starter solids did not equal the loss in milk replacer solids. In contrast, the restricted fed calves appeared

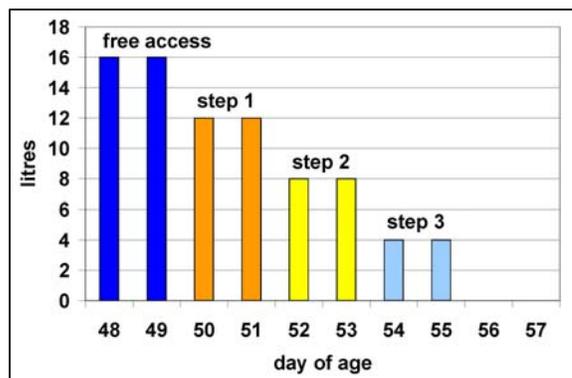


Figure 1. This chart shows the size of the steps in a 3-step, 7-day weaning program with milk replacer. These ad lib fed calves were consuming 16 L of acidified milk replacer at the start of weaning. Milk intake was reduced by 25% (4 litres) at each step. Each bar represents one day of feeding.

A similar 3-step weaning (not shown) was used for the control calves fed 5 L of milk replacer per day by the beginning of weaning time.

to have fared better at matching their increased intake of starter solids with their losses from the removed milk powder.

Research papers that show changes in body weight during the weaning period are extremely useful. From the data presented here, ad lib calves could have benefited from matching milk removal more closely with their ability to increase their daily starter intake. A more nutrient-dense starter may be useful. By extrapolation from the Miller-Cushon data, 150 g of dry matter, or about a litre of whole milk or milk replacer per day, may be a reasonably sized step for weaning. For sure, a reduction of 25% is a plunge, not a step, and should not be recommended for calf-wellbeing.

1. Miller-Cushon EK, Bergeron R, Leslie KE, DeVries TJ. Effect of milk feeding level on development of feeding behaviour in dairy calves. *J Dairy Sci* 2013; 96:551–564.

(Continued on page 10)

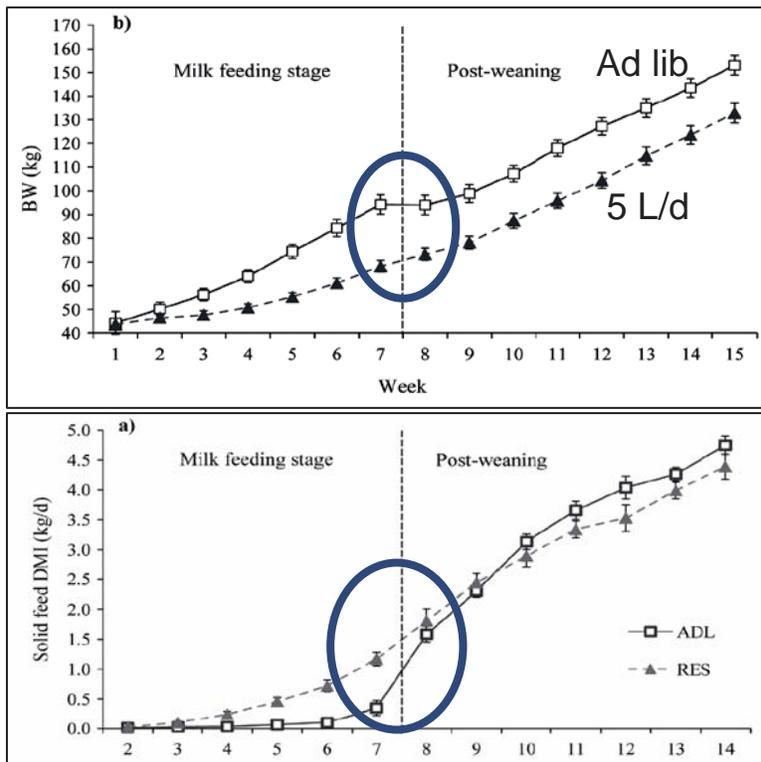


Figure 2 shows two charts from the research paper. The top chart shows the loss of body weight during the week of weaning for the ad lib-fed calves and the gain in weight for the restricted-fed calves. The lower chart shows the increase in solid feed intake during the week of weaning.

Lowering the Bar at Feed Bunks

Neil Anderson, Veterinary Science and Policy Unit, OMAF and MRA

Blemishes in the area of the supraspinous processes (high on the neck) on dairy cows are evidence of repetitive injury or contact with either tie rails in tie stalls, neck rails in free stalls, or the rail of a post-and-rail restraint at a feed bunk. The blemishes are self-inflicted when cows reach for feed or compete with herd mates at free-stall feed bunks. In newer free-stall barns for Holsteins, the distance from the floor to the bottom of the rail is often about 48 inches. In hind-sight, this location is proving to be a hazard for the most sensitive area of the neck.

In barns with lower rails, cows may have hair loss at a position half way between the poll and the supraspinous processes. Although the hair loss may

be unsightly, it is less traumatic than blemishes and injuries in the area of the supraspinous processes.

Properly designed and installed slant bar restraints seldom lead to neck blemishes and feed barriers keep feed close to cows. However, for practical reasons, producers want to keep their sweep-in feed bunks and post-and-rail restraints. If so, it's time to lower the high bar to a more cow friendly location. That's about 40 inches above the cow alley. This task was accomplished with about 30 minutes labour for two men for one pen of cows recently. A week later, there wasn't any noticeable drop in feed intakes or milk production.

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Figure 1. The left photograph shows the location of the restraint rail at about 48 inches above the cow alley. Note the rail contacts the cows' necks in the area of the suprascapular processes. The right photograph shows the rail lowered to about 40 inches. Note the rail contacts the neck about midway between the poll and the suprascapular processes.

Heat Shields for Acidified-Milk Warm Boxes

Neil Anderson, Veterinary Science and Policy Unit, OMAF and MRA

The Stewiacke Warm-box Milk Bar was invented by dairy producers in Nova Scotia and designed to keep milk fed ad-lib to their calves at a good feeding temperature throughout the day. An infosheet about building the Warm-box is available at www.omafra.gov.on.ca/english/livestock/dairy/facts/milkbox.htm

The original design includes a heat shield between the baseboard heater and the milk barrel. The

designers included this to prevent the occurrence of hot spots that made cottage cheese out of the acidified milk. The heat shield, as shown in the plans, is an essential part of the warm box. Recently however there have been some situations where this installation step has been missed. For veterinarians and herd advisors, when monitoring calf feeding practices on dairy farms, check to see that a heat shield is present in warm-boxes in use.

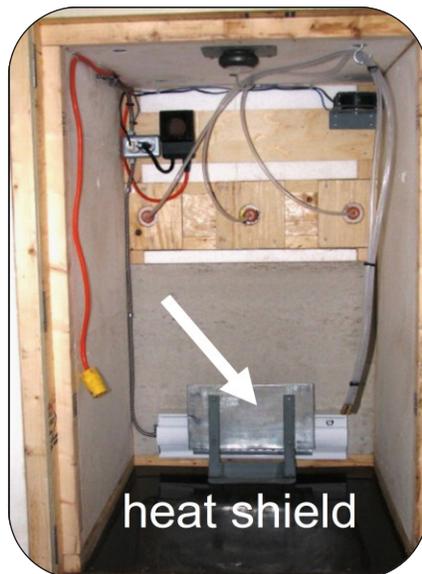


Figure 1. The left photograph shows the correct construction of a warm box with a heat shield and barrel bumper in place inside a warm box. The right photograph shows a warm box with no heat shield between the heat source and the pail of acidified milk. Direct heat on acidified milk is sure to make cottage cheese.

Spring Forward – Replace Plastic Feeding Equipment

Neil Anderson, Veterinary Science and Policy Unit, OMAF and MRA

Dr. Steve Scott from Perth doesn't mince words when giving advice about hygiene for feeding dairy calves. "Throw them out! Buy new ones!" I heard him bark while waving a new pail and nurser bottle in the air for a group of producers to see. His points were well made and irrefutable. In time and from constant use, plastic becomes almost impossible to clean properly.

I have some first-hand experience with Dr. Scott's advice. About a week after witnessing his magnificent cajoling, I took a telephone call from a producer who reluctantly replaced one of her barrels for feeding acidified milk. She had called previously to ask why her milk would acidify in the barrel and make cottage cheese without the addition of acid. I guessed that over the years she had created a colony of acid-loving and producing bacteria in a well-used and difficult to clean barrel. It was a good news report because her new barrel solved the problem. She was going to replace her other barrels that day. She also telephoned the milk replacer supplier with a gracious apology for blaming his product for her troubles.

Plastic isn't like stainless steel. Plastic is porous and scratches and can become difficult to clean and disinfect.

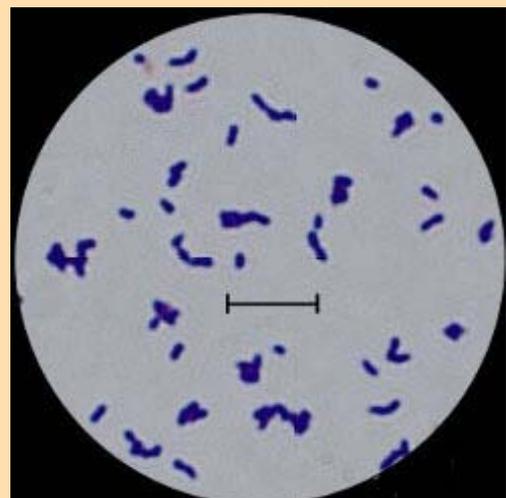


Figure 1. The nipple bottle on the door of the dishwasher appears white and clean. Note the two bottles inside the dishwasher. The bottle on the right is remarkably different in colour and cleanliness. It's past its best before date and should be discarded.

Just like when we set our clocks forward for daylight savings time and we're advised to change the batteries in our smoke detectors, we should also be reminded to replace the plastic equipment used to feed our nursery calves.

***Coryne to Actino to Arcano to Trueperella pyogenes* – Another New Name!**

As of late 2012, *Arcanobacterium pyogenes* has been reclassified and is now known as *Trueperella pyogenes*. In case you are asked at cocktail parties, the genus name *Trueperella* has been proposed in honour of the German microbiologist Hans Georg Trüper. *Trueperella pyogenes* can cause abscesses, mastitis, pneumonia, etc. in ruminants and in pigs, and is of great importance in veterinary medicine.



Introduction of the Cattle Health and Veterinary Medicine Use Declaration to the Ontario Dairy Industry

Ann Godkin, Veterinary Science and Policy Unit, OMAF and MRA

Our dairy supply management system is focused on domestic production and consumption, but what many of us forget is that a small percentage of our milk supply does go into products that are exported to countries around the world, including the European Union (EU). Four years ago, an audit of the Ontario dairy industry was completed by European Union inspectors. The goal of the audit was to examine conditions under which Canadian dairy products were produced, from farm to table, to ensure that they would be safe and wholesome for European consumers. Production methods on farms and at processors, regulations (federal and provincial) and food safety programs were assessed. As a result of the audit, the federal government was informed that in Ontario several areas were found to be unacceptable including:

- the lack of oversight of cattle health on farms.
- the lack of oversight of veterinary drug use, particularly extra-label drug use (ELUD), on dairy farms.

In particular, Ontario was singled out for the lack of oversight of veterinary drug use by producers, mainly because of over-the-counter sales of antibiotics in this province.

In response to this audit, to become compliant with EU requirements, the Ontario dairy industry (Dairy Farmers of Ontario (DFO) and OMAF and MRA) was called on by the Canadian Food Inspection Agency (CFIA) to initiate actions that would satisfy the EU concerns. Implementation of compliant activities was needed to enable CFIA to continue to sign export certificates for dairy products (predominantly cheddar cheese) originating from processing plants using milk from Ontario dairy farms.

Representatives from DFO, OMAF and MRA, University of Guelph and the Ontario Association of Bovine Practitioners met to discuss what could be done to address the issues. The result was the creation of the “Cattle Health and Veterinary Medicine Use Declaration”. The goal of the

Declaration is to enable both veterinarians and producers to document knowledge of their responsibilities regarding ELUD and to indicate that cattle health is being monitored and maintained on each farm to a degree that would support the safety of the meat or milk...in other words, there are no ongoing unusual disease outbreaks or conditions affecting the cattle currently on the farm. The Declaration is designed to be an activity that can be completed at the time of a herd’s annual Johne’s Disease Risk Assessment visit, or similar activity.

In January 2013, the Declaration was passed into legislation and is now included in Regulation 761 of the Milk Act. The requirement for a completed Declaration takes effect on May 1st 2013. Herd owners must have completed the Declaration with their veterinarian in time for their next Grade A inspection, which coincides with their next Canadian Quality Milk (CQM) full or self-validation date. A letter was sent by DFO to all producers in late February explaining this requirement.

Veterinarians should expect to be asked to complete and sign the Declaration by their clients. Veterinarians can meet the health oversight requirements of the Declaration by completing an annual Johne’s RAMP, or may conduct a similar inspection if the herd is not a participant in the Johne’s program. Note that formal enrolment in the Johne’s program is not a requirement to use the Johne’s RAMP document for this purpose. Completing the RAMP simply shows that the veterinarian has visibly observed all of the cattle groups in the herd. It is hoped that using the Johne’s RAMP will bring added value to the inspection for both the herd owner and the veterinarian by fostering good discussion and review of management procedures that prevent the spread of Johne’s disease as well as other common calf diseases annually.

(Continued on page 14)

The expectation regarding veterinary drugs is that the veterinarian will ensure that the producer has knowledge that:

- a veterinary prescription is required when a veterinarian recommends the use of any veterinary drug by an ELUD, and
- veterinary prescriptions can only be provided to a producer by a veterinarian when a VCPR (vet-client-patient relationship) exists between the producer and the veterinarian.

It is expected that this knowledge can be delivered verbally and that the signature of the producer indicates that this discussion has occurred.

The Cattle Health and Veterinary Medicine Use Declaration has been posted on DFO's website at www.milk.org, under Farmers and then Programs and Policies and is also available on the Johne's program website at www.johnes.ca

Results of Using the SCC Risk Assessment and Management Plan to Help Producers Lower SCCs

***Ann Godkin, Veterinary Science and Policy Unit, OMAF and MRA
Natalie Newby and Dave Kelton, Department of Population Medicine,
Ontario Veterinary College, University of Guelph, and
Karen Hand, Strategic Solutions***

Last year, with the change to a lower Somatic Cell Count (SCC) regulatory limit of 400K pending for August 1st 2012, there was heightened interest in mastitis prevention in the Ontario dairy industry. As part of the dairy industry's SCC200 project, veterinary practitioners and other milk quality advisors attended SCC workshops to develop specific skills and enhance mastitis prevention knowledge. The goal was to assist advisors to work with their producer clients to achieve lower SCCs. As part of the workshop, the use of a new SCC Risk Assessment and Management Plan (SCC RAMP), developed specifically for Ontario farms, was demonstrated.

Subsequent to the workshop, practitioners were offered the opportunity to do SCC RAMPs over a two-week period on up to 10 farms each. Practitioners selected clients to work with and attended each farm once at milking time to complete the SCC RAMP with the producer. The completed SCC RAMPs and the veterinarian's evaluation of the SCC RAMP process itself were submitted to the project team.

Information from the RAMPs was combined with producer monthly bulk tank somatic cell count (BTSCC) information for the year 2012. For each herd a "Before" (average of June, July and August

2012 BTSCCs) and an "After" (average of October, November and December 2012 BTSCCs) were created and added to the data base. The objective was to compare overall and sectional SCC RAMP scores to changes in BTSCC performance. The BTSCC changes for the enrolled herds were compared to changes in similarly calculated BTSCC averages in the overall Ontario herd population.

Twenty-three veterinarians submitted 70 RAMPs for inclusion in the analysis. The "Before" BTSCCs of the 70 herds ranged from 114 to 672 ('000 cells/ml). Half of the selected herds had a "Before" BTSCC of over 300,000 cells/ml. Compared to the distribution of BTSCCs for the whole province, the herds selected by their veterinarians for participation were more likely to be in higher SCC categories.

As in other RAMP-type evaluations the goal for the veterinarian is to score the producers' management practices (what they actually do and how often they do it this way) for practices that would increase the risk of mastitis infection spread (from environment to cow or from cow to cow). In the SCC RAMP there were 270 "risk points" potentially available, with higher scores reflecting higher risk. The Total Risk Score for the 70 herds ranged from 36 to 192. Analysis showed that the Total Risk Score was positively associated with the herd's "Before"

(Continued on page 15)

BTSCC ($p=0.004$). Herds with a higher “Before” BTSCC had more risks identified by the veterinarians. Individually (univariate analysis) the following sections were each associated with “Before” BTSCC: Dry Cow/Maternity Risks, Lactating Cow Hygiene Risks, Therapy Risks, and Equipment Risks. Collectively, of all sections, those remaining significant in the final multivariable analysis included: Dry Cow and Maternity Risks ($\beta= 2.8$; $P=0.03$), Lactating Cow Hygiene Risks ($\beta= 13.6$; $P=0.02$) and Therapy Risks ($\beta= 3.4$; $P=0.05$). The co-efficients indicated that the Lactating Cow Hygiene Risk section had the biggest association with “Before” BTSCC, followed by Therapy Risks and Dry Cow/Maternity Risks sections. Equipment Risks did not remain in the final model.

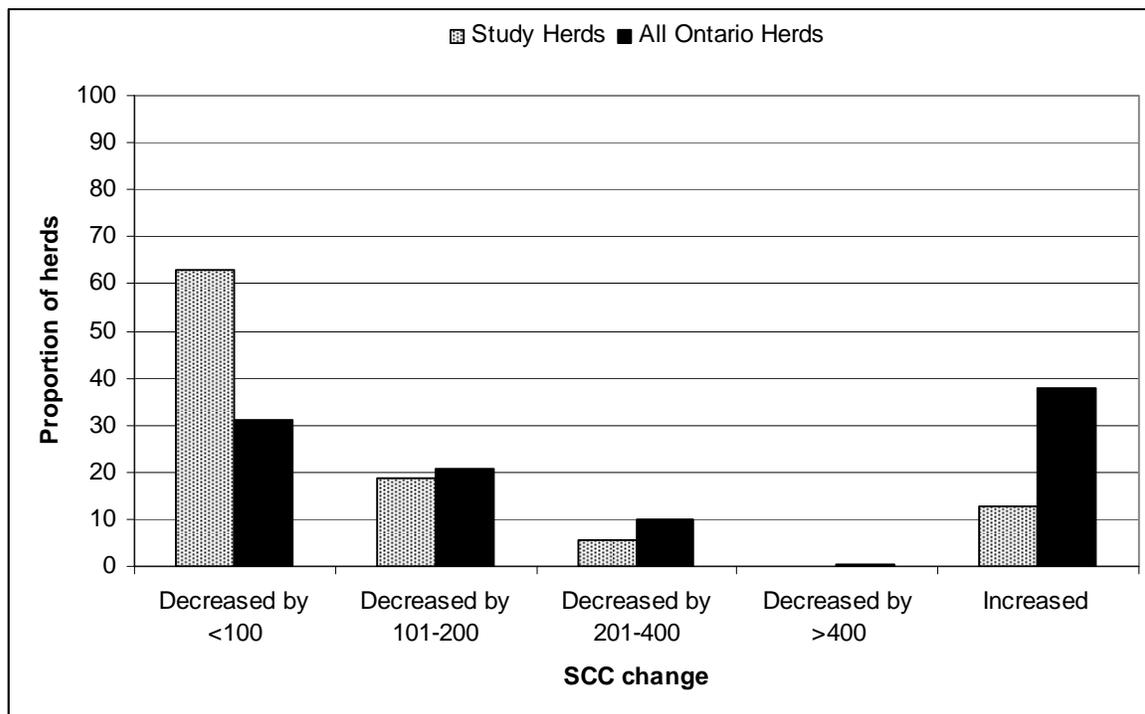
During the time frame, April 2012 to December 2012, the overall provincial BTSCC decreased. We wanted to see how doing the SCC RAMP might have influenced any changes in the BTSCCs in the 70 herds. To determine whether the changes in BTSCCs for the SCC RAMP herds were the same as for all herds in the province, the difference in “Before” and “After” BTSCCs was calculated for all

herds. The distribution of the changes in BTSCCs for SCC RAMP herds, compared to all herds in the province over the same time, is shown in **Figure 1**. Figure 1 shows that more SCC RAMP herds decreased from 1 to 100,000 cells per mL than all Ontario herds (62% of RAMP herds vs. 30% of all Ontario herds). There was no difference between RAMP herds and all Ontario herds for the other categories of BTSCC decrease. Interestingly, only 12% of RAMP herds increased their BTSCCs from “Before” to “After”, compared to 38% of all provincial herds.

Overall this small study suggests that conducting the SCC RAMPs resulted in more herds decreasing their BTSCC and fewer herds experiencing a BTSCC increase, compared to herds that did not participate in the SCC RAMP. Conducting investigations using the SCC RAMP would be a good service for veterinarians to offer their clients, especially as we head into warmer weather, a time of increased mastitis risk in many herds.

The SCC RAMP form and Manual giving direction on how to score the management practices for risks can be found at www.scc200.ca

Figure 1: Herds categorized by change in BTSCC average, “Before” BTSCC (average of June-August 2012) vs. “After” BTSCC (average of October-December 2012). Study herds are 70 Ontario herds that underwent veterinary conducted SCC RAMPs in a two-week period in September 2012.



Small Ruminant Veterinarians of Ontario Update

Jocelyn Jansen, Veterinary Science and Policy Unit, OMAF and MRA

The Small Ruminant Veterinarians of Ontario (SRVO) continues to grow as an organization. Memberships for 2013 have again reached 100 members. SRVO held its 4th Annual General Meeting (AGM) and Winter Continuing Education meeting on March 21st, 2013.

Dr. Allyson MacDonald highlighted the accomplishments of SRVO in 2012 and discussed issues for the upcoming year. SRVO continues to represent its members at industry meetings (i.e. Small Ruminant Foreign Animal Disease Workshop), on national committees (i.e. Sheep and Goat National Biosecurity Standards) and lobbying government (i.e. need for licensed small-ruminant pharmaceuticals).

Issues facing CgFARAD and financial support for the organization were discussed. Results of the

study entitled *Seroprevalence of Coxiella burnetii infection (Q-Fever) in Ontario veterinarians and veterinary students who are members of the Small Ruminant*



Small Ruminant Veterinarians of Ontario

Veterinarians of Ontario were shared at the AGM and will be mailed to veterinarians who were unable to attend the meeting. The main focus of SRVO continues to be continuing education, with two meetings held each year. No formal date has been set for the fall meeting. For more information on SRVO, please visit www.srvo.ca

Update on the Ontario Johne's Program

Nicole Perkins, Johne's Program Co-ordinator and
Ann Godkin, Veterinary Science and Policy Unit, OMAF and MRA

The Ontario Johne's program for dairy herds runs from January 2010 to October 2013. After enrolling in the Program, each Ontario producer can test their lactating cow herd for Johne's antibodies using either a milk or blood ELISA test, do a Johne's Risk Assessment and Management Plan with their herd veterinarian and remove all high-titre cows identified on testing. Reimbursement for eligible costs occurs when all program requirements are completed. The program is in the final stages. All herd testing under the Program needs to be completed by May 31st to allow all program requirements to be fulfilled by August 2013.

To March 2013, about 50% of Ontario's producers have participated in the program. As all participation is fully voluntary, this is outstanding. This level of interest demonstrates a very keen approach to

improvements in calf health, product quality and good biosecurity practices.

Some herds have expressed interest in a second round of participation. If producers are interested, they can enrol to participate a second time provided funds remain. Producers wishing to pursue a second round should contact the Program Co-ordinator to ensure funds remain available. Contact the program by email at johnes@uoguelph.ca or by phone (226) 979-1664 before testing.

Refer to **Table 1** for the updated statistics. Note that some statistics will change as producers complete their program requirements already in process.

(Continued on page 17)

Table 1. Ontario Johne's Program: Annual Participation and Results, 2010 to 2013

Herd Enrolment and Completion	Nov 2010	Nov 2011	Oct 2012	Mar 2013
# of Herds Tested	700	1339	1828	2215
# of Herds Eligible to Test (in the "windows")	1001	2429		4265
% of Eligible Herds Participating	70%	55%	49%	52%
# of Herds Reimbursed		1141	1600	1791
% of Herds Completing Full Program		92%	92%	92%

Risk Assessment and Management Plans

# of RAMPS Completed for 2010 Herds	663	663	663	663
# of RAMPS Completed for 2011 Herds		610	681	681
# of RAMPS Completed for 2012 Herds			397	503
# of RAMPS Completed for 2013 Herds (in process)				151

Cow and Herd Tests

# of Cows Tested by Program	49633	91696	124032	146704
# of Cows with Positive Tests		845	1194	1408
% of Cows Tested with Positive Tests		0.92%	0.96%	0.96%
# of Herds with at Least 1 Positive Test (0.1+)		319	471	580
% of Herds with at Least 1 Positive Test (0.1+)		24%	26%	26%

High-Titre Cows

# of High-Titre (HT) Cows Identified	71	137	192	227
% of HT per Total # Positive Cows		16%	16%	16%
% of HT per Total # of all Cows Tested		0.15%	0.15%	0.15%
# of HT Animals Removed as per Program	28	68	82	139
% of HT Cows Removed as per Program	40%	50%	43%	61%

Herds with High-Titre Cows

# of Herds with at Least 1 HT Test	45	93	134	159
% of Herds Tested with at Least 1 HT Cow	6%	7%	7%	7%
# of Herds Removed HT(s) as per Program	21	58	82	103
% of Herds with HT who Removed HT(s) as per Program	47%	62%	61%	65%



Ontario Ministry of Natural Resources

The latest issue of the Rabies Reporter (Volume 23, Number 4) is now available on the Ministry of Natural Resources website at www.mnr.gov.on.ca/en/Business/Rabies/2ColumnSubPage/196811.html

Visit the Rabies in Ontario website to learn more about the rabies control programs at www.ontario.ca/rabies

DAIREXNET

Two new articles are available on DAIREXNET.

1. Real World Recommendations— part of the monthly nutrition series, and covering updated vitamin nutrition recommendations from Bill Weiss at the Ohio State University.
www.extension.org/pages/67423/real-world-vitamin-recommendations
2. Handle Sexed Semen with Care to Maximize Heifer Fertility—every successful artificial insemination (AI) program begins with proper semen handling.
www.extension.org/pages/67413/handle-sexed-semen-with-care-to-maximize-heifer-fertility



OMAF and MRA Factsheets

The following new Animal Health Factsheets are now available from Service Ontario

- Online at www.serviceontario.ca/publications
- By phone Monday to Friday, 8:30 a.m. to 5:00 p.m.
1-800-668-9938 (Toll-free across Canada),
1-800-268-7095 TTY (Toll-free across Ontario)

- Animal Health – Botulism, Order # 13-001
- Animal Health – Equine Herpesvirus, Order # 13-003
- Animal Health – Hantavirus, Order # 13-005
- Animal Health – Coxiellosis (Q Fever), Order # 13-007
- Animal Health – Influenza, Order # 13-009
- Animal Health – Listeriosis, Order # 13-011
- Animal Health – Plague, Order # 13-013
- Animal Health – Salmonellosis, Order # 13-015
- Animal Health – Tularemia, Order # 13-017
- Animal Health – Verocytotoxigenic *Escherichia coli*, Order # 13-019

Animal Health — Influenza
T. Patena

ORDER NO. 13-009 A00EX 400/660 JANUARY 2013

Factsheet

Influenza affects a variety of species and usually causes cough, nasal discharge and if spread of influenza can be prevented by biosecurity measures and vaccination.

CAUSE
Influenza virus has various subtypes (H1N2 and H2N2). These subtypes over time and, in rare instances, can development of a new influenza sub-type can lead to outbreaks or even these in birds or no immunity against.

CLINICAL SIGNS
Outbreaks of influenza usually occur spread rapidly, although sometimes extremely mild. Animals such as pigs die will have a poor appetite and nasal discharge and fever with signs stiffness. Animals rarely die from it can be quite sick from the disease a several days.



Figure 1. Good biosecurity measures in healthy.

Ministry of Agriculture, Food and Rural Affairs

Animal Health — Botulism
T. Patena

ORDER NO. 13-001 A00EX 400/660 JANUARY 2013

Factsheet

Botulism is a rare disease that causes weakness and paralysis and can lead to the death of an animal or human. Botulism can be prevented by providing good quality feed and ensuring proper sanitation and, in humans, by following proper food canning techniques.

CAUSE
A bacterium called *Clostridium botulinum* produces the toxin that causes botulism. The bacteria produce spores that can remain inactive in the environment for a long time. When dead animals and plants decay, they create warm, moist and low-oxygen conditions that cause the spores to germinate, grow and produce toxins that affect the nervous system.

Botulism outbreaks occur when animals eat improperly stored or spoiledilage, decaying vegetation, poultry manure, or feed and water contaminated with bird or rodent carcasses. Outbreaks can also occur in large numbers of aquatic birds (Figure 1). Occasionally, the bacteria cause a disease of young fish called "shaker fish syndrome" (Figure 2). It can also infect seagulls or injection sites.



Figure 1. Ducks can be affected by botulism. Source: Shutterstock.com



Figure 2. Botulism can occasionally cause a disease in young foals called "shaker foal syndrome."

CLINICAL SIGNS
The disease usually affects cattle, horses, sheep and birds, and rarely occurs in dogs, cats and pigs. In the early stages of the disease, animals show signs of reluctance, tremors and incoordination. In rare mild cases, animals will recover over time, but most animals become weak, paralyzed and eventually die or have to be humanely euthanized. In some outbreaks, large numbers of animals can be found dead or down over a short period of time.

TREATMENT
Your veterinarian can diagnose and provide treatment and advice for botulism. Treatment involves providing care and support for the animals; an antiserum may be available in some areas.

Treatment of botulism is usually not successful in the advanced stages of the disease. It is important to identify and remove the source of the botulism.

Ministry of Agriculture, Food and Rural Affairs



Online Training—Webinars and Courses

DAIReXNET Webinars—

<http://www.extension.org/pages/29156/upcoming-dairy-cattle-webinars> 

- | | |
|----------------|---|
| April 8, 2013 | Economic Analysis Tools for Dairy Reproduction Programs
12:00-1:00 p.m. Central Time, Dr. Victor Cabrera, University of Wisconsin-Madison |
| April 22, 2013 | New Tools for Dairy Reproduction Programs
12:00-1:00 p.m. Central Time, Dr. Paul Fricke, University of Wisconsin-Madison |
-

Hoards Dairyman and University of Illinois Webinars—

<http://www.hoards.com/webinars> 

- | | |
|---------------|---|
| April 8, 2013 | Reviewing Forage and Feed Costs—What’s Fair?
12:00-1:00 p.m. Central Time, Dr. Mike Hutjens, University of Illinois |
|---------------|---|
-

Technology Tuesdays Webinar Series—“Dairy Systems Planning and Building” Penn State College of Agricultural Sciences

<http://extension.psu.edu/animals/dairy/health/educational-programs/technology> 

- | | | |
|----------------|---------------------------------------|--|
| April 9, 2013 | The Use of Existing Buildings | } All sessions are held 8:30-10:00 a.m.
(EDT/EST) |
| April 23, 2013 | Animal Welfare and the Dairy Industry | |
| May 14, 2013 | Building Structures that Last | |
-

University of Illinois Online Dairy Courses—<http://online.ansci.illinois.edu/>

Classes include:

1. Principles of Dairy Production (ANSC 201)
2. Advanced Dairy Management (ANSC 405)
3. Advanced Dairy Nutrition (ANSC 423)
4. Milk Secretion, Mastitis and Quality (ANSC 435)
5. Advanced Reproductive Management (ANSC 437)
6. Forage Crops and Grasslands (ANSC 499—CpSc 414)

Now taking enrollments for the Fall session.

To review the class schedules, topics, and enrollment details, visit the website.

BVD Consult—www.bvdinfo.org

A newly available online tool (BVD CONSULT) designed to help veterinarians and cow-calf producers develop practical strategies to control Bovine Viral Diarrhea. BVD consult combines available research into a user-friendly format that emphasizes key management decisions that impact the successful implementation of BVD control at the individual herd level. While BVD CONSULT will be available for producers to access, this tool requires a base knowledge about disease control for optimum utilization; so veterinarian-client teamwork is preferred to implement BVD control strategies.

Continuing Education/Coming Events

- April 10 & 12, 2013 Herd Health and Nutrition Conference presented by Cornell University Pro-Dairy and Northeast Ag and Feed Alliance. <http://ansci.cornell.edu/prodairy/HHNC/index.html>
April 10—DoubleTree by Hilton Hotel, East Syracuse, New York.
April 12—Fireside Inn, West Lebanon, New Hampshire.
- April 17 & 18, 2013 Ontario Association of Bovine Practitioners and Ontario Agri-Business Association Spring Meeting—Young Sherlock at the Dairy: Unleashing the Potential, Holiday Inn (Scottsdale), Guelph, Ontario. www.oabp.ca
- April 23, 2013 Ontario Association of Bovine Practitioners Milk Bacteriology Workshop, Animal Health Laboratory, University of Guelph, Guelph, Ontario. Limited enrolment; pre-registration required. Contact Jim Fairles, jfairles@uoguelph.ca, (519) 824-4120 ext. 54611.
- May 20-22, 2013 2013 International PRRS Symposium, China National Conference Center, Beijing, China
www.prrsymposium.org
- May 21-23, 2013 Minnesota Dairy Health Conference presented by the University of Minnesota's College of Veterinary Medicine, Minneapolis Airport Marriott, Bloomington, Minnesota.
www.cvm.umn.edu/vetmedce/events/MinnesotaDairyHealth/dairy/home.html
- May 22-24, 2013 5th European Symposium of Porcine Health Management and Pig Veterinary Society 50th Anniversary Meeting, Edinburgh International Conference Centre (EICC), Edinburgh, Scotland. www.esphm2013.org
- May 28-31, 2013 25th American Dairy Science Association® (ADSA®) Discover Conference on Food Animal Agriculture—New Developments in Immunity, Nutrition, and Management of the Preruminant Calf, Eaglewood Resort and Spa, Itasca, Illinois
www.adsa.org/Meetings/DiscoverConferences/25thDiscoverConference.aspx
- June 3-6, 2013 Dairy Nutrition and Management Shortcourse for Agriservice Professionals, Miner Institute, Chazy, New York. www.ansci.cornell.edu/dm/dncourse
- June 5-7, 2013 World Pork Expo, Iowa State Fairgrounds, Des Moines, Iowa. www.worldpork.org
- June 12 & 13, 2013 Four-State Dairy Nutrition and Management Conference, Grand River Center, Dubuque, Iowa. <http://wiagribusiness.org/fourstate.php>
- June 19 & 20, 2013 Ontario Pork Congress, Stratford Rotary Complex, Stratford, Ontario.
www.porkcongress.on.ca
- June 25-27, 2013 Precision Dairy Conference and Expo, Mayo Civic Center, Rochester, Minnesota.
<http://www.precisiondairy.umn.edu/>

(Continued on page 21)

Continuing Education/Coming Events (continued)

- July 8-12, 2013 The American Dairy Science Association® (ADSA®) and American Society of Animal Science (ASAS) Joint Annual Meeting, Indiana Convention Center, Indianapolis, Indiana. <http://jmtg.org/2013/index.asp>
- July 10-13, 2013 65th Canadian Veterinary Medical Association Convention—Best Medicine Practices—Timely Topics, Victoria Conference Centre, Victoria, British Columbia. <http://canadianveterinarians.net/professional-convention.aspx>
- August 11-14, 2013 The 17th International Symposium and the 9th International Conference on Lameness in Ruminants, hosted by the University of Bristol School of Veterinary Sciences, Bristol Marriott City Centre Hotel, Bristol, United Kingdom. www.bristol.ac.uk/vetscience/lamenessconf
- September 19-21 2013 46th Annual Conference of the American Association of Bovine Practitioners, meeting jointly with the American Association of Small Ruminant Practitioners, Milwaukee Convention Centre, Milwaukee, Wisconsin. www.aabp.org/meeting/default.asp
- June 8-11, 2014 23rd International Pig Veterinary Society Congress, Moon Palace Golf & Spa Resort, Cancun, Mexico. www.ipvs2014.org

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Ann Godkin, Veterinary Science and Policy Unit, Ontario Ministry of Agriculture and Food and Ministry of Rural Affairs, Unit 10, 6484 Wellington Road 7, Elora, ON N0B 1S0

Tel.: (519) 846-3409 Fax: (519) 846-8178 E-mail: ann.godkin@ontario.ca

Comments:

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Deadline for next issue: June 7, 2013



Ministry of Agriculture and Food
Ministry of Rural Affairs

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