CEPTOR

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Changes at OMAF

Deb Stark, Office of the Chief Veterinarian, OMAF

If you were reading the news in April, you may have caught an announcement by the Minister of Agriculture and Food regarding reorganization at OMAF. We've made a few changes that should streamline some of our work.

One such change was the creation of a new Food Safety Division, bringing together areas of food safety that were formerly distributed across the Ministry. This was recommended by Justice Haines in his review of Ontario's meat inspection system.

Another change was the creation of a Chief Veterinary Office (OCVO). The mandate of this office is quite specific – to take the lead (provincially) in the event of animal health/related food safety emergencies, to assess the need for an animal health act, and to develop a biosecurity strategy for Ontario. It's an exciting project and a natural extension of OMAF's veterinary programming. Dave Alves, Bruce McNab, Paul Innes and I are now in the OCVO.

Veterinary Science (the group of veterinarians and the surveillance specialist in Fergus) will remain in the same location and have the same function but will now be called the Animal Health and Welfare Unit. Added to the unit are the members of the former Animal Care group. Leslie Woodcock is the acting manager.

So we've changed some titles and some work plans. But don't worry. All of your usual contacts are still in place and ready to help you. Through the new Chief Veterinary office, I hope the province will also be providing new tools that will help us all do a better job at protecting the animals, the people and the industry.

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Reminder of Ontario Johne's Disease Prevention Program 2005/2006

Jocelyn Jansen and Ann Godkin, Animal Health and Welfare, OMAF

Most of you will have received a letter outlining the Johne's Disease (JD) Prevention project that we, in cooperation with CanWest DHI and Dairy Farmers of Ontario (DFO), have received funding to begin this summer. Thanks very much to those of you who have already responded. It's great that you are so keen to help with this effort.

We are still eager to have more of you identify a client that you would like to work with on this program.

We want to have **eighty veterinary-dairy client pairs** sign on as soon as possible. Multi-person practices may sign up more than one pair. In fact, several practices already have four clients signed up. Enrolling early is encouraged as it helps us plan and ensures that you and your client will not be left out. We plan to conduct the visits and testing at convenient times for you and your clients over the next four to six months. We understand that there are conflicts with field work and practice staffing but we hope that planning ahead may help alleviate this.

Our intent is to work with you and herds within your practice where you and your client have already established that there is a high probability that there currently are, or recently have been, some animals infected with JD. This could be based on previous clinical cases (even if they are now culled), lab results from animals without clinical signs (serology, fecal culture) or from a strong history of animals with clinical disease but not tested. Herds that have recently submitted milk samples for JD testing to DHI are also eligible.

Our hope is that, with the financial incentives offered in this project, the convenience of the newly available milk test, and the joint consultation offered in this program, you will be able to persuade some of these clients to enroll in the project and to become more proactive in their approach to JD. Herds in this project may opt to join a National Voluntary JD Control Program (tentatively to start in the fall of 2006) some time in the future if it is their desire to achieve some kind of certification. We are closely monitoring developments on the national scene to ensure that the merging of the Ontario program and any national one will be efficient and advantageous to producers. Others may prefer to continue working with you and document what they are doing to reduce the impact of the disease and improve their herd. Currently, this program is the only financial assistance available to Ontario's producers to begin working on this disease.

The program is open to all veterinary practitioners in Ontario. If we have missed sending you a letter, please give us a call. We ask that you contact Ann Godkin, (519) 846-3409, or Jocelyn Jansen, (519) 846-3414, if you have comments or questions.

Practitioner Recognized for Community and Professional Activities

Word has reached us that Dr. Ken Bridge of the Ripley-Huron Veterinary Clinic was awarded the 2004 Tommy Cooper Award in April 2005 by the Ripley Agricultural Society. Ken was recognized for his community volunteer work, for his role as a livestock-medicines-course teacher and his work developing pre-conditioning programs for beef cattle. As well, Ken has been involved in 4-H for 20 years and is a member of the Huron-Kinloss Emergency Management Committee. ***Congratulations Ken!***

Lasting Impressions

Tim Blackwell, Animal Health and Welfare, OMAF

"Hi this is Betty from the tire store and I'm calling to make sure you are completely satisfied with the service you received from our technicians." What Betty doesn't know is that I have returned three defective tires this year. I doubt that she cares, I suspect that there is little she can do about it and I want to get back to my supper. So I tell her everything was just fine and she says thank you for being a valued customer. Although the terrible tires have made a lasting impression on me, the phone call always puts the icing on the cake.

As irritating as this type of follow-up may be, there is value and sometimes a professional obligation to determine the outcome of services we provide to clients. Do we as veterinarians effectively measure client satisfaction with our services?

Many of us use the "no news is good news" approach. We make a diagnosis, recommend management changes or medications, estimate the length of time until results should be expected and ask to be contacted if the problem does not resolve. Recommendations in today's larger herds can be complex and outcomes are far from guaranteed. As a result the "no news is good news" approach may not be a reliable method by which to monitor results. Although it seems reasonable to ask a producer to call us if a health or production problem does not resolve, this may not be an effective means to monitor treatment success and client satisfaction.

Producers may hesitate to call their veterinarian if a problem persists when they have not had time, or the inclination, to implement all the recommendations that were made. If the problem is 50% improved, producers may assume this is all that can be expected. Sometimes problems persist but each day the producer decides to wait and see how the animals look tomorrow before calling. Weeks may go by before the veterinarian is finally contacted. The "no news is good news approach" places all the responsibility for the follow-up on the farm owner or manager. However, professional concern for the welfare of the animals and the livelihood of the producer should prompt a more proactive approach by the veterinarian.

Veterinarians have a few excuses of their own not to phone clients to check on herd recovery rates. There is the worry that your recommendations were unsuccessful and the client is angry. There is the possibility that the client has called another vet. The client may reply that they just haven't had a chance to do what you suggested, in which case you both may feel a little embarrassed on the phone. There is a possibility that the client will be glad you phoned and want to talk about this and a few other matters for an hour or more. If the client tells you everything is fine and worked out just as you said, he or she may wonder why you are bothering them when they are so busy. And then of course there is every veterinarian's favorite excuse, "I better call him tomorrow."

After a veterinarian visits a farm to address health problems causing serious animal welfare or financial concerns to the farmer, the next contact the producer has with that veterinarian should not be the bill in the mail. Part of the veterinarian's case notes should indicate when a follow-up call will be made to assess the herd response. In less serious cases the call may be made by the receptionist, stating that Dr. X wants to know if the animals are responding as expected. However, in serious disease outbreaks, the call should be made by the attending veterinarian. If the call is made and all is well, you and the producer should feel good. If all is not well, the producer will be pleased you are staying on top of his problem. In cases where recommendations have not been implemented or where the client has called another vet, you are at least current on the status of the herd. When follow-ups on herd recommendations are planned and carried out, the lasting impression is one of true concern and professional responsibility.

Practical Prevention of Sow Shoulder Lesions in the Farrowing Crate

Kathy Zurbrigg, Animal Health and Welfare, OMAF

In Denmark, the swine industry has had to deal with a negative consumer response to media reports regarding pressure ulcers on the shoulders of sows. The development of lesions on the shoulders of sows, while nursing their pigs in farrowing crates, is commonly reported. The lesions are similar to the pressure or bed-sores in people who are confined to a bed or wheelchair. They can range in severity from hair-loss and redness to decubitus ulcers (**Figure 1**). The anatomy of the swine shoulder, a large tuberosity on the scapula with little muscle covering it at this point, (**Figure 2**) and the restricted mobility resulting from being housed in traditional farrowing crates make sows prone to shoulder lesions. We do not know all the factors that lead to the development of these lesions. Some of the risk factors shown to be involved so far have been increased age, decreased weight, poor body condition, lameness and having a farrowing-crate floor that is not solid.

Figure 1. Sow shoulder lesion

Figure 2. Large tuberosity on scapula

Whether it is in Denmark or Ontario, producers and veterinarians share in the frustration of trying to prevent sow shoulder lesions. When a sow lies on her side on the slatted flooring of a farrowing crate, the tuber of the scapula has only half of its total surface area to rest on. This increases the pressure exerted at the contact points where the shoulder meets the flooring. The increased pressure cuts off the area's blood supply and causes necrosis of the tissues. This, combined with one or all of the other risk factors, can lead to an ulcerative lesion. Providing a solid flooring surface under the shoulder region decreases the risk of a lesion developing, as the pressure is dispersed over a greater contact area.

A cheap, quick method for creating this solid surface is to secure a 2-foot-square section of rubber stall mat (1.5-2 inches thick) to the crate floor in the area where the sow's shoulder is when she lies down (**Figure 3**). The stall mats can be purchased from many farm retail sources for approximately $50.00 and usually come in 4'x 8' sheets. Eight "sow mats" can be cut from a single stall mat. The mats can be cleaned and reused, making them economical for the treatment and prevention of sow shoulder lesions. Mats can be secured to the slats on the crate floor by drilling a hole in each corner of the mat and tying them

Figure 3. "Sow mat" cable-tied to floor of crate

to the slats using heavy duty (width of at least ¼ inch) plastic cable ties. The mats should be positioned so that the edge of the mat is at least 6 inches away from the feeder. This will keep the surface of the mats clean and dry. The cable ties should be secured around one of the cross pieces that support the flooring, to prevent the mats from sliding out of position.

The majority of sows readily accept the new flooring surface, but occasionally a high-strung gilt or young sow will aggressively and repeatedly root up the mat when it is first put into the crate. In this case, a one-time dose of a sedative approved for swine (e.g., Stresnil) will calm the gilt and help her to accept the mat.

Checking for shoulder lesions can become part of the daily routine when walking through the farrowing rooms. Just as it is an accepted practice to give oxytocin when a sow is having trouble farrowing, adding a "sow mat" to the crate should become the "treatment" for sow shoulder lesions.

"Sow mats" should be installed as a preventative measure. When loading the farrowing crates, train staff to note at-risk sows or those that had lesions with a previous litter and recognize that these are at higher risk to develop shoulder lesions. Adding a mat to the crates of these sows can prevent the start of an ulcerative lesion.

Even without knowing all the factors that cause shoulder lesions, treating and preventing the majority of them can be accomplished simply and easily.

Inexpensive Equipment for Ad Libitum Feeding of Dairy Calves

Neil Anderson, Animal Health and Welfare, OMAF

After touring more than 20 Ontario dairy farms, Laura Kulkas, a Finnish veterinarian, suggested we consider the Finnish way of raising calves. Ontario producers commonly rear suckling dairy calves in individual pens and restrict milk feeding. Farmers in Finland often choose group housing and free-choice milk feeding (**Figures 1 and 2**). I used to believe our way was best. I don't anymore. Here's what Laura and several Finnish farmers showed me last winter to change my opinion.

Figure 1

Figure 2

Advantages for Farmers and Calves

Ad libitum feeding of calves in groups has several advantages. Finnish farmers claim less labour, inexpensive equipment and efficient use of surplus colostrum, transition cow milk or milk from cows under treatment. They also report calves stay healthy, have less diarrhea and demonstrate less sucking of navels or ears. In addition, they told me ad libitum feeding is an easier feeding procedure for substitute workers. Furthermore, they claim their calves suckle according to appetite and the ad libitum feeding satisfies the calves' biological need

to suckle. Producers reported very good calf growth with weight gains equal to or greater than 1 kg/day. Anecdotally, they say the calves' stomachs stay in good condition and they use feed and nutrients better.

Closer to home, a New York State study showed a reduction in labour of 9 minutes per calf per day – from 10 minutes for calves in individual pens to 1 minute for calves reared and fed in group housing.

The basic components (**Figure 3**) of a Finnish ad libitum feeding system include a reservoir to contain the milk or milk replacer and a plastic tube and a one-way valve to carry milk to a soft, rubber nipple attached to a pen wall.

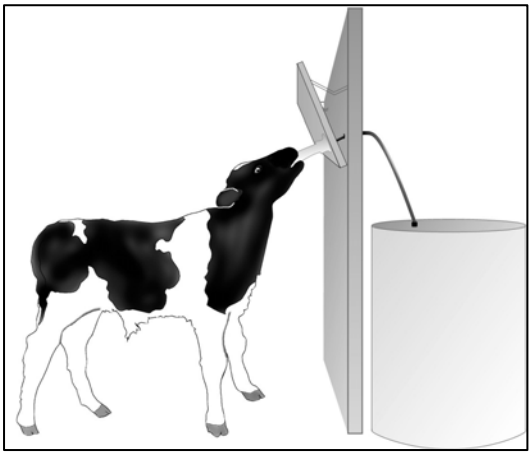

Figure 3

Acidified Milk or Milk Replacer

The Finnish ad libitum feeding system uses milk or milk replacer acidified with formic acid. Finnish milk replacer contains 50% skim milk and 26% whey powder. Some Ontario milk replacers have similar formulas. It is unknown if the Finnish method of acidification will be successful with entirely whey-based milk replacers.

Figure 4

Storage Container

Each calf will drink about 8-12 L per day. Acidified milk keeps its quality for 2-3 days during cold winter weather and 1-2 days during warmer seasons. Therefore, a 100-L container could feed 10 calves for one day and a 300-L container could feed 10 calves for 3 days.

A plastic garbage container with wheels, a lid and handles is a common container on Finnish farms (**Figure 4**). The wheels make it easy to move when necessary. The lid keeps flies and cats out of the reservoir. On some Finnish farms, an old 300-L milk tank is recycled for this purpose (**Figure 5**).

Figure 5

For larger demand, Vasikkapiika ("Calf-maid") feeders are in use (**Figure 6**). These stainless steel tanks on wheels have built in heaters and mixers. Farmers push them to the dairy for washing and to the milk parlor for filling with milk. FinnLacto in Seinäjoki in western Finland makes them. www.finnlacto.fi/liitteet/vasikkapiika.pdf

Figure 6

Mixing Device
Acidified milk forms gradients if not stirred regularly. Storage containers can be equipped with an automatic mixer, which stirs the liquid once per hour for 10 to 12 seconds. During a farm visit, one producer said he "made a lot of butter" before he got his automatic timer set correctly. At another farm, the farmer mixed milk replacer with an electric drill and a long-armed paint stirrer (**Figure 7**). In general, farmers stir milk manually 2 to 4, or more, times per day.

Figure 7

Heating Equipment
The milk should be kept at 20°C during cool and cold weather. A thermostatically controlled submersible heater appeared to be the equipment of choice. At one farm, the farmer installed a pump to circulate the milk several metres to the nipples in the pen and back to the reservoir.


Figure 8

Nipples, Milk Line and One-Way Valve
One nipple is enough for 3-10 calves. Calves suckle the milk into the nipple from the container through a 3/8-inch plastic hose. (**Figure 8**) There is a one-way valve to prevent reflow.

The nipple and hose attach to the wall of the calf pen about 70-80 cm (28-32 inches) from the floor. The nipples slope slightly downwards to ensure optimal feeding position. Finnish farmers use various devices to assure the calves face the nipples straight on for suckling. This prevents the calves from damaging the nipples by chewing on them with their molar teeth. (**Figures 9 and 10**)


Figure 9

HIKO nipples, valves and mounting system are in use on some Finnish farms. (HIKO is a German manufacturer. The equipment is "Multi-Steigrohrvorrichtung SK 1000 Art.Nr. 1000, PVC-Schlauch, 8mm" and can be seen at hiko.com/more/german/shop/shop1.htm.) In April, the Canadian dealer for HIKO in Quebec had none in stock and planned to discontinue the line because of no sales. He offered to 'special order' them for me in lots of 100. The *Peach Teat* is a New Zealand product that will do the same job. This company supplies nipples, valves and tubing for use with reservoir feeders. (www.peachteatnipple.com) Neither the wholesaler nor the Canadian dealer had the nipples in stock. A dealer in New York State has a ready supply and claims sales are increasing in his local market place.


Figure 10

Washing and Cleaning
In Finland, advisors recommend washing the nipples and hoses once or twice per week with warm water (not hot) and a good detergent to remove fats. During my farm tours, farmers told me they wash the nipples, hoses and container at every filling.

Free Choice Water, Starter and Hay or Silage
At every farm, I saw good quality hay or silage, calf starter and water offered free choice for calves on the ad libitum milk feeding system.

Self-Cleaning, Bedded Pens
Although I saw calves reared on bedded packs and in self-cleaning pens, my hosts told me that self-cleaning bedded pens were the first choice. The resting area for self-cleaning pens has a slope of 6-10% and a depth (front to back) of about 4 metres or less. On some farms, a rubber mat covered concrete floors. Chopped straw or wood products were the bedding materials. The walk alleys at the feeding areas were either solid concrete or slatted floors.

Application on Ontario Farms
Free choice milk feeding assures calves suckle to their needs. This feature alone could use up surplus milk and solve calf health problems. One challenge to adoption is the myth that too much milk causes diarrhea. Research by Dr. Dan Weary, a myth-buster at the University of British Columbia, showed this to be untrue. Ontario producers could benefit from some local research and a few demonstration projects. Inexpensive equipment, less labour and healthy calves should be good reasons to consider ad libitum feeding.

Acknowledgements and References
- *Dr. Laura Kulkas and her colleagues at Valio Dairy, Jouni Pitkäranta and several Finnish dairy farm families showed me calf rearing in Finland.*

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Making Acidic Milk with Formic Acid for Ad Libitum Feeding to Calves

Neil Anderson, Animal Health and Welfare, OMAF

Finlanders studied the use of acid to store cattle feed long ago. Artturi Ilmari Virtanen began his studies during the 1920's and presented his *AIV System as the Basis of Cattle Feeding* in 1943. In 1945, he received the Nobel Prize in Chemistry for his work. Today, his initials are in the name of a commercial product - *AIV2Plus* – a formic acid used for preserving fodder and acidifying milk for calves.

Figure 1 shows the first test using the AIV silage method, designed to reduce the pH of silage to below 4. It was carried out on July 10, 1928 at Askola in southern Finland.

Free Choice Milk Feeding to Calves

According to Finnish experts, free choice milk feeding is possible when milk is acidified either biologically using sour milk or by adding formic acid. The acidity of the milk may be one reason calves consume small meals. However, calves left to nurse their dams normally consume milk in 7–10 meals per day. Their total intake approaches 25% of their body weight or about 1 kg per meal. Since the acidified milk has a shelf life of 1–3 days, formic acid may act as an antimicrobial agent. It could be (1) lowering the pH and reducing the rate of microbial growth and/or (2) directly interacting with the microbial cells.

Acidification of Milk

During visits to several farms in Finland, producers showed me the practical application of feeding acidified milk. The method of acidifying milk and feeding calves appeared in a recent issue of their dairy producer magazine. Here are the basic steps as translated by staff at Valio dairy. www.valio.fi/maitojame/tuotteet/hapanjuotto.htm.

- Acidify the milk to a pH between 3.8 and 4.5. Calves find the milk less appealing when the pH is less than 4.0.
- *AIV2 Plus* is 85% Formic Acid.
- Add 3 mL *AIV2 Plus* formic acid to 1 litre milk – 3 mL/L.
- The milk must be cold – less than 5°C, before acidification. Warmer milk may precipitate too fast and unevenly.
- Dilute the acid by 1 to 10 with water to prevent local precipitation or coagulation of the milk. Prepare the acid for use by diluting 85% AIV2 Plus – mix 1 mL acid in 10 mL water. Always add acid to water and not the other way around.
- For 100 litres of milk, mix 300 mL of 85% formic acid into 3 L of water. Stir the diluted acid evenly into cold milk. Mix well immediately.
- Check the pH of the acidified milk with pH paper and be sure it is between 4.0 and 4.5
- Warm the milk to the temperature needed for feeding and it is ready for the calves.

Formic Acid silage inoculants are not available in Ontario. However, beekeepers use 65% Formic Acid to control tracheal mites. Using the 65% concentration and a sample of bulk tank milk, we found that 4 mL per litre of milk will give a pH of about 3.8. Using 3.8 mL per litre of milk will yield a pH of about 4.1. Therefore, when acidifying milk with 65% Formic Acid,

- Be sure the temperature of the raw milk is less than 5°C before adding acid.
- Add Formic Acid 65% at the rate of 3.8 mL per litre of raw milk.
- Prepare the acid for use by diluting with water – mix 1 mL acid in 10 mL of water. Dilute acid and cold milk will minimize or prevent local precipitation/coagulation.
- For 1 litre of milk, mix 3.8 mL of 65% Formic Acid into 38 mL of water. Stir the diluted 38 mL of acid evenly into the cold milk. Mix well immediately.
- For 100 L milk, mix 380 mL of 65% Formic Acid into 3.8 L water. Stir the diluted acid evenly into the milk.
- Check the pH of the acidified milk with litmus paper. Assure the pH lies between 4 and 4.5.

pH Paper

A narrow range pH (3-5.5) paper is available from VWR International, 2360 Argentia Road, Mississauga, ON L5N 5Z7. 1-800-932-500. www.vwrcanlab.com

Cautions and Safety

Formic acid is hazardous to skin, eyes and lungs. For safety, dilute the acid with water and work with weaker acid. Store acids safely and keep them out of reach of children.

Diarrhea in Calves
In Finland, advisors recommend feeding acidified milk for farms experiencing diarrhea problems in their calves. They claim acidified milk prevents diarrhea. Calves can eat as much as 9 to 12 litres a day with free choice feeding. At these feeding levels, the consistency of feces is loose but the situation is different from a serious diarrhea caused by bacteria.

Acidification of Milk Replacer
While in Finland, I saw milk replacer being acidified and fed to calves. Farmers followed the mixing directions on the label for the milk replacer and then added formic acid to attain a pH of 4 - 4.5. Their milk replacer has about 50% skim milk powder and some whey powder. Recently, Grober Nutrition, Inc. (415 Dobbie Drive, Cambridge, N1T 1S9, Tel: (519) 622-2500, Fax: (519) 622-7694 www.grobernutrition.com) confirmed that their milk replacers contain greater than 50% skim milk powder. We need research to determine if entirely whey-based milk replacers can be used successfully with Finnish methods of acidification. A Quebec company (Les Ailments Serval Canada Ltée, 303, rue Saint-Marc, Louiseville, J5V 2G2, (819) 228-5552, serval.canada@qc.aira.com) produces milk replacers that contain more than 50% skim milk powder. Caprival, their milk replacer for goat kids, has more than 50% skim milk powder.

Acknowledgements and Reading
- *Valio Ltd., Helsinki, Finland. www.valio.fi/maitojame/tuotteet/hapanjuotto.htm.*
- *Dr. Laura Kulkas and several Finnish farmers showed me their methods of feeding calves acidified milk or milk replacer.*
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Feeding Frequency and Abomasal pH in Dairy Calves

Neil Anderson, Animal Health and Welfare, OMAF

Prevention of abomasal ulcers in suckling calves presents challenges to veterinarians and their clients. The commonly proposed etiologies for abomasal ulcers include mechanical abrasion from coarse ingesta, infection with *Clostridium perfringens* Type A, trace mineral deficiencies and stress. Because of sudden deaths or unrewarding treatments, it is important to control or prevent ulcers. Feeding frequency could be a preventive measure.

Researchers at the University of Illinois set out to find practical treatments. They speculated that long periods of low pH in the abomasum could increase the chance of injury to the abomasal mucosa. Further, they wondered if feeding frequency had an effect on abomasal luminal pH and the risk of ulceration. The researchers discovered changes in abomasal pH with different schedules for feeding milk replacer. From their findings, they advise increasing feeding frequency to prevent abomasal ulcers in suckling calves.

Table 1 shows the six treatments - suckled 2x, intubated 2x, fasted, suckled 3x, suckled 4x and suckled 8x. It also shows the mean abomasal luminal pH associated with the treatments and the percent of 24 hours that pH exceeded 3.0 and 4.0. During 24-h fasting, abomasal pH remained below 2.0. The researchers found pH increased from baseline values to about 6.0 within 3 minutes of suckling or intubation. Table 1 also shows that abomasal pH stayed above 3.0 for 53% of 24 hours (about 13 h) for 2x (12 h) suckling compared to 71% of 24 hours (about 17 h) for 8x (3 h) suckling. This appears graphically in **Figure 4**, one of six figures used to illustrate the authors' findings. Suckling milk replacer every 3 hours (8x) increased abomasal pH to 5.0 and the pH remained steady for about 45 minutes before decreasing to 2.0 by 3 hours.

Table 1. Least squares means for 24-h abomasal luminal pH of dairy calves (n = 6) administered different treatments.

Item measured	Treatment						
	Suckled 2x	Intubated 2x	Fasted	Suckled 3x	Suckled 4x	Suckled 8x	SE
Mean pH	3.44[a]	3.17[b]	1.73[c]	3.69[d]	3.64[d]	3.67[d]	0.12
% 24 h that pH > 3.0	53[ab]	49[a]	0[c]	61[bd]	61[bd]	71[d]	9
% 24 h that pH > 4.0	46[a]	31[b]	0[c]	51[a]	52[a]	48[a]	9

[a – d] Means with different superscripts were significantly ($P < 0.05$) different.

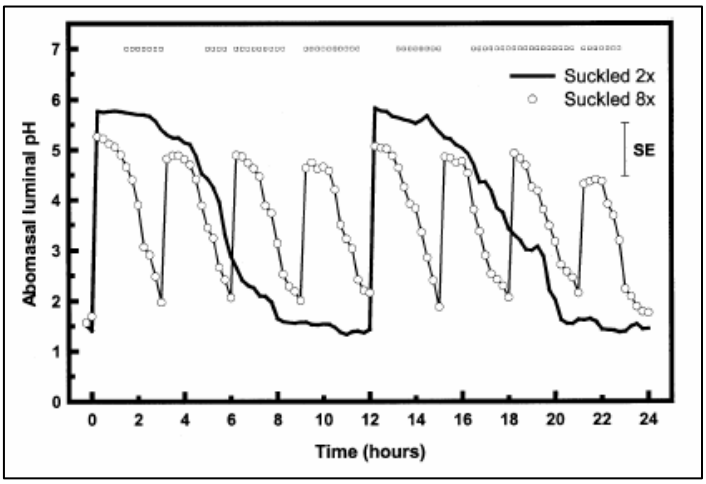

Figure 4. Least squares mean abomasal luminal pH in dairy calves (n=6) that suckled milk replacer at 3-h intervals (8x; O_O) and 12-h intervals (2x;__). Open symbols at the top of the graph represent values that were significantly (P <0.05) different at the same time. Bar represents the overall standard error (SE) for least squares means.

The practical implementation of their advice to increase suckling frequency requires a shift from two or three daily feedings to replicating normal suckling of 7 to 10 times per day of calves left with their dams. The simplest ad libitum feeders include a soft, rubber nipple attached to a pen wall, a plastic tube, a one-way valve and a reservoir to contain the milk or milk replacer. While uncommon in Ontario, the feeding system is common elsewhere in the world.

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Ranges of pH for Activity of Common Microbes

Neil Anderson, Animal Health and Welfare, OMAF

Several microbial agents thrive in normal cow's milk, an ideal medium with a pH of 6.6. Lower that pH to less than 4.5 and many struggle to survive or show reduced activity or inactivation. Microbial agents that are sensitive to pH < 4.5 are of interest in rearing suckling calves or kids.

Acidification (pH 4.0 - 4.5) of milk is attractive because low pH can alter the rate of microbial growth. A calf or kid could benefit from exposure to decreased bacterial loads in milk. For producers using acidified milk, there could be savings in labour related to ad libitum and group feeding systems. In addition, acidification may provide a way to store colostrum and transition milk for 1-3 days without refrigeration.

Table 1 lists several bacteria that are common contaminants during harvesting of milk or of interest as common disease causing agents. Some microbes multiply quickly in raw milk at room temperatures and contribute to spoilage. Fortunately, many bacteria loose their activity at pH < 4.4 and generally shut down multiplication.

Table 1. Examples of pH values for activity of several microbial agents.
Sources - standard texts and personal communications.

Microbial Agent	Optimum	Range	Inactivated / Lost Activity
Bacillus cereus		4.3 – 9.3	< 4.3 and > 9.3
C. perfringens	6.0 – 7.0	5.5 – 9.0	< 5 and > 8.3
C. botulinum		4.6 – 9.0	< 4.6 and > 9
E. coli (STEC)	6.0 – 7.0	4.4 – 9.0	< 4.4
E. coli O157:H7	6.0 – 7.0	4.4 – 9.0	< 4.4
Lactobacillus acidophilus	5.8 – 6.6	4.0-4.6-6.8	< 4.4
Listeria monocytogenes	7.0	4.4 – 9.4	< 4.4
Mycobacterium avium paratuberculosis	6.0 -7.0	5.0 – 7.0	< 5 no growth
Pseudomonas aeruginosa	6.6 – 7.0	5.6 – 8.0	< 5.6
Salmonella spp.	7.0 – 7.5	3.8 – 9.5	< 4.4
Staph. aureus	7.0 – 7.5	4.2 – 9.3	< 4.2
Strep. pneumoniae	7.8	6.5 – 8.3	< 4.5
Vibrio cholerae	7.6	5.0 – 9.6	< 4.5
Yersinia spp.	7.2 – 7.4	4.8 - 10	< 4.8 and > 10
Bovine Leukemia Virus (BLV)			3.8 – 4.4
Rotavirus		2.2 – 8.0	< 3.0 and > 10
Inf. Bov. Rhinotracheitis virus (IBR)		6.0 – 9.0	
Bovine Virus Diarrhea virus (BVD)		5.7 – 9.3	
Bovine Corona virus (BCV)		3.0 and above	
Parainfluenza 3 virus (PI-3)			sensitive to low and high pH
Bov. Resp. Syncytial virus (BRSV)			sensitive to low pH
Cryptosporidium			4.0 (loss of activity)

Some readers may recall last fall's Ontario Association of Bovine Practitioners' meeting, where Dr. Sheila McGuirk presented case studies of investigating diseases in suckling calves. She taught us to consider bacteriological load in colostrum or milk as risks to calves. Her case studies revealed very heavy growth of several bacterial types in colostrum and whole milk. The case histories demonstrated opportunities to decrease contamination during harvesting, and to maintain quality through sanitary cold storage of colostrum and fresh cow milk. Since clean, cold storage is a challenge on some farms, an alternative or supplemental approach could be acidification, especially when excellent management of milk for calves or kids is in doubt. Acidification could be useful in free-choice feeding systems for kids and calves. In the next issue of CEPTOR, there should be a brief report from a pilot project about feeding acidified colostrum, free choice, from a few hours of birth to 5-days of age, to kids born from about 150 does in June, 2005. Information on microbial growth in acidified milk or milk replacers is scant. Calves or kids and their care givers might benefit from some home-grown research on activity of microbial agents in acidified milk.

Acknowledgements
Dr. Susy Carman, Animal Health Laboratory, and Dr. Lucy M. Mutharia, Molecular and Cellular Biology, University of Guelph, kindly provided pH values for some agents shown in the table.

Plate Loop Count of Acidified, Raw, Bulk Tank Milk

Neil Anderson, Animal Health and Welfare, OMAF

Finnish dairy farmers acidify milk or milk replacer with formic acid for feeding calves. They store acidified milk without refrigeration in ad libitum feeding systems for 1-3 days. Formic acid lowers pH and may reduce the rate of microbial growth. This report shows results from a pilot project to compare the Plate Loop Count (PLC) of raw, bulk tank milk to acidified, raw, bulk tank milk when stored at room temperature for about 50 hours.

Methods

At the time of collection at the farm, the temperature of the raw bulk tank milk was 1°C. It was transported with ice packs in an insulated cooler to the laboratory about 25 minutes from the dairy farm. For PLC testing, the bulk tank sample was divided into control and treatment samples. The treatment sample had 3.8 mL of Formic Acid (65%) per L added to bring the cold raw milk to pH 4.1. Laboratory staff stored treatment and control milk at room temperature. They stirred the milk prior to each PLC sampling.

Findings

Table 1 shows the sampling times, Plate Loop Counts and pH values for control and acidified milk. The 11:00 a.m. Day 1 acidified and control milk had PLCs of 1.0×10^3/mL on blood agar and no growth on McConkey agar. Three hours later, on blood agar, the control milk PLC was 3.2×10^3/mL and the acidified milk PLC was ten-fold less at 3.0×10^2/mL. There was no growth on McConkey agar for either acidified or control milk at 11:00 and 14:00 hrs on Day 1.

On Day 2, the control milk sample had a foul odour that persisted during the remainder of testing. The acidified milk had no remarkable odour during testing. PLCs on blood and McConkey agars were too numerous to count (TNTC, greater than 1.0×10^6/mL) for control milk at 21 hours and for the remainder of the trial. There was *no growth* on blood agar or McConkey media for acidified milk tested at 21 hours. The PLC for acidified milk remained as *no growth* until the end of the trial. The PLCs were less for acidified milk than the control milk 21 hours after the start of the trial. The pH for acidified milk stayed constant for at least 27 hours and by 45 hours, it decreased to 2.8. The pH of control milk decreased from 8.0 to 4.2 during the trial.

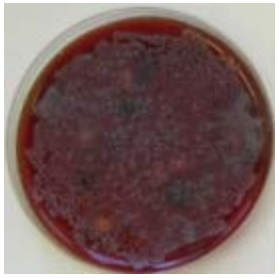
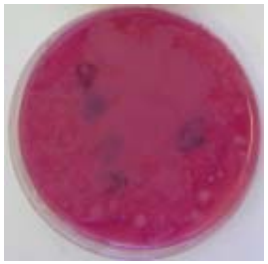
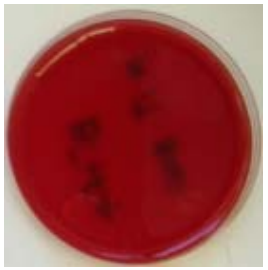
Comments

Although the pilot project showed inhibition of bacterial growth by acidification, there are several reasons to conduct more thorough studies. Milk from normal cows is about pH 6.6 and the reason for our raw bulk tank milk pH of 8.0 is unknown. The raw milk had a low initial PLC. It would be useful to study the effects of acidification of raw milk with greater bacterial loads. It is unknown if acidification inhibited bacterial growth or killed the bacteria. Further experiments could determine if it's possible to rejuvenate bacteria in acidified milk by re-adjusting the sample to the pH of normal milk. Future studies could identify specific microbial agents in raw milk samples and how acidification affects them. It may be useful to compare acidification and on-farm pasteurization. The pH of acidified milk dropped to 2.8 sometime between 27-45 hours after acidification and the reason is unknown. Formal research projects should provide useful information to producers considering feeding acidified milk to their calves.

Acknowledgements

Tyler O'Neill (OMAF summer student) collected raw milk and performed acidification experiments. Jessica Yeung, Anna Bashiri, Nicole Perkins and Dr. Ken Leslie, Department of Population Medicine, Ontario Veterinary College, University of Guelph, very graciously provided laboratory services.

Table 1. Plate Loop Count comparing raw, bulk tank milk to acidified, raw, bulk tank milk, stored at room temperature.
* TNTC ⇨ *Too numerous to count*; ** TC ⇨ *Total Count*

Sampling Time		**Bulk Tank Milk (control)**			**Bulk Tank Milk + Formic Acid (treatment)**		
		TC** (blood agar)	***McConkey***	***pH***	***TC** (blood agar)***	***McConkey***	***pH***
Day 1	11:00 am	1.0 x 10^3/1.0 mL	no growth	8.0	1.0 x 10^3/1.0 mL	no growth	4.1
	2:00 pm	3.2 x 10^3/1.0 mL	no growth	7.0	3.0 x 10^2/1.0 mL	no growth	4.2
Day 2	8:00 am	TNTC *	TNTC *	5.8	no growth	no growth	4.0
	11:00 am	TNTC *	TNTC *	5.7	no growth	no growth	4.0
	2:00 pm	TNTC *	TNTC *	5.6	no growth	no growth	4.0
Day 3	8:00 am	1.3 x 10^9/1.0 mL	7.0 x 10^8/1.0 mL	4.1	no growth	no growth	2.8
	11:00 am	TNTC*	TNTC*	4.2	no growth	no growth	2.8
	2:00 pm	TNTC*	TNTC*	?	no growth	no growth	
Photograph of plates taken on day 2							

Colostrum Loses Value with Increased Time after Calving

Ann Godkin, Animal Health and Welfare, OMAF

The acquisition of adequate immunity by newborn calves is the most important factor affecting their resistance to disease as neonates. We know that the amount of colostrum consumed, the time from calving to colostrum ingestion, the antibody content of the colostrum and the vigour of the calf all affect the final immune status of the calf. Recent research points out that the timing of colostrum collection from the cow is also very important.

Colostrum samples collected at 2, 6, 10 and 14 hours post-calving from 13 cows were measured for IgG concentration. The samples collected at 6, 10 and 14 hours after calving had significantly lower mean IgG concentrations than did those collected at 2 hours. Colostral IgG concentrations were 113, 94, 82 and 76 g/L at 2, 6, 10 and 14 hours post-calving respectively.

The loss of colostral IgG has not been explained. Each quarter of each cow had a 10 mL sample removed for testing and each quarter was sampled at only one of the four sampling times. Following sampling, each quarter was completely milked out to determine the total weight of colostrum present in the quarter at the time of sample collection. As the weight of the colostrum in each quarter did not vary, the authors suggest that it is unlikely that dilution from additional milk production was the reason for the lower IgG concentrations over time. They suggest that the antibodies may be passively resorbed into the cow's circulation over time.

On some farms a cow's colostrum is not used to feed her own calf. Rather, frozen colostrum from another cow may be used, and the cow's own colostrum collected at a more convenient first milking time. On some farms there may be an inclination to leave this first milking until a time when milking equipment is turned on to milk the other cows. Hours could elapse until a cow is first milked. The current research points out that using only the colostrum collected within the first two hours after calving for the first feedings for a newborn calf will help to increase the amounts of IgG delivered.

- *Moore et al. Effect of delayed colostrum collection on colostral IgG concentration in dairy cows. JAVMA 2005; 226(8,Apr):1375*

Why the Excitement Over the Johne's Milk Test?

Ann Godkin, Animal Health and Welfare, OMAF

DHI has recently begun to offer a milk ELISA test for Johne's Disease (JD) using the samples collected for DHI monthly testing. In conjunction with this, assistance is offered to veterinarians to conduct milk testing, risk assessment and the development of a JD control strategy for a client's farm. In particular, herds suspected of being positive for JD and seeking to prevent new JD infections in calves are sought for participation. Effective JD control programs focus on the need to protect the neonatal and young heifers from exposure to the JD bacteria that the older infected cows shed in manure. Identifying shedding cows, not infected cows, is a critical step.

The milk test offered now by DHI has been evaluated by researchers at OVC, led by Dr. Steve Hendrick. Results are unrolling in the veterinary literature – the most recent paper was published in the Feb. 1, 2005 JAVMA. This paper describes the study done in 9 herds known to have JD where the results of serum, milk and fecal testing on 689 cows were compared. The findings can help to guide us in how the milk test can be utilized in herd JD prevention programs.

In this research, about the same numbers of cows tested positive on the serum and milk ELISA tests. Frequently, the same cows did not test positive with both tests. In this study, slightly fewer cows tested positive on the milk test than on the serum test; however, a higher percentage of those that did test positive on the milk test were shedding JD bacteria.

The correlation of the positive milk tests and positive fecal culture was particularly high among the cows that were high fecal shedders of JD bacteria. The milk test then, is particularly useful for identifying cows that are more likely to present an infection risk to herd youngstock. To reduce the risk of infection in youngstock, dealing with these cows becomes a priority.

As with all JD tests, relatively few of the infected cows will be detected on a single round of testing. However, if the cows that test positive are more likely to be JD bacteria shedders, the actions dictated by the positive test become clearer. Cows' positive on the milk test may need to be calved in a separate area to avoid environmental contamination of the maternity area for future baby calves. Their own calves are more at risk of exposure and special efforts should be made to remove these from the cow and the cow's environment immediately after birth. Colostrum and milk from these cows are of higher risk for infecting heifer calves. Their calves may be less desirable to retain as replacements because of early exposure to JD and ultimately the test-positive cows likely will be placed higher on the culling list.

- *Hendrick S, et al. Evaluation of enzyme-linked immunosorbent assays performed on milk and serum samples for detection of paratuberculosis in lactating dairy cows. JAVMA 2005;226(3,Feb):424.*

Antibiotic Storage Affects Residue Levels

Ann Godkin, Animal Health and Welfare, OMAF

Positive inhibitor tests of milk sometimes are not easily explained. When investigated, most causes of bulk tank positive tests are linked to problems with not withholding milk from treated animals for the full withdrawal time. Sometimes positive tests on individual cows occur where variation in excretion time attributable to the cow or the product is suspected to occur. While this rarely affects the bulk tank milk tests, explanations are wanted so future problems can be avoided.

Researchers from Germany recently documented that prolonged excretion of an antibiotic residue occurred after cows were treated with improperly stored mastitis tubes.

The product used is not currently available in Canada but is in the beta-lactam family and contains cefquinome (4^{th} generation cephalosporin) in a paraffin base. The manufacturer recommends that the product not be stored at temperatures exceeding $20^{o}C$. Healthy cows were treated in 4 quarters after 3 consecutive milkings, with either properly stored tubes or tubes stored on a radiator over night. The cows that received the "heat treated" tubes had concentrations of the antibiotic in milk that exceeded the EU Maximum Residue Limit (MRL) for up to 120 hours after the end of the with-holding period.

The manufacturer determined that the heat-treated tubes had changes in colour, homogeneity and increased viscosity. The researchers speculate that the heat-induced changes in the viscosity led to a slower release of the cefquinome and to the extended withdrawal time.

Proper storage and handling of all antibiotics, according to the manufacturer's recommendations on the label, is important for ensuring the label withdrawal times remain valid.

The study was reported in the IDF Mastitis Newsletter #26, May 2005.

Use of Analgesia in Cattle by Ontario Veterinarians

Neil Anderson, Animal Health and Welfare, OMAF

At a recent Guelph meeting about lameness and welfare in cattle, 35 practitioners and 6 claw trimmers discussed pain management in their patients. One example was treatment of sole ulcers. Before discussions, participants estimated the pain level experienced by cows when treated by them and the percentage of their patients that received an analgesic for treatment. Afterwards, they predicted the percentage of their patients that would receive an analgesic in the future.

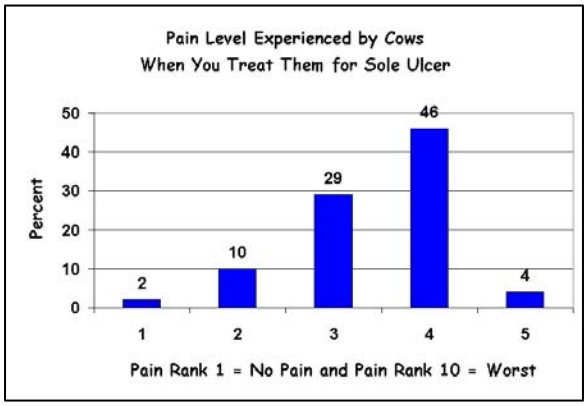


Figure 1

With painful honesty, they confided that their treatment procedures hurt (**Figure 1**) and many patients do not receive analgesia (**Figure 2**, solid column). For example, 50% of participants said they gave analgesia to 0-20% of their patients and 2% to 81-100% of their patients. However, by the end of the course, 67% changed their attitude and plan to increase their use of analgesics. For example, the 41-100% ranges included 50% of participants after discussions compared to10% before (Figure 2). From the discussions, it appeared that practitioners planned to use intravenous lidocaine local anaesthesia more often. Within the 0-20% category, there were 5 individuals whose present and planned actions did not change. Some of these may have been claw trimmers with no ready access to lidocaine or training in the intravenous technique.

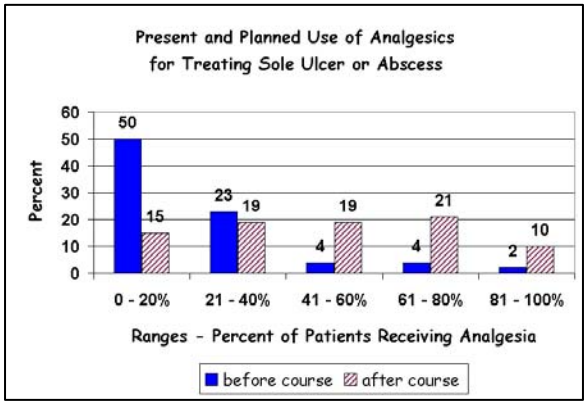


Figure 2

Additional insight into use of analgesia in cattle comes from a mail survey in April 2005. Responses to seven questions by 89 Ontario practitioners appear in **Table 1**.

Table 1. The percentage of 89 practitioners who agreed, disagreed or were unsure in response to seven statements about use of analgesic drugs in cattle.

Statement	Agree	Disagree	Unsure
1. Analgesics may mask deterioration in an animal's condition.	46	39	15
2. Cattle benefit from receiving analgesic drugs as part of their treatment.	96	2	2
3. Some pain is necessary to stop the animal from becoming too active.	20	67	12
4. Cattle recover faster if given analgesic drugs.	82	6	12
5. Drug side effects limit the usefulness of giving analgesic drugs.	17	71	12
6. Farmers would like cattle to receive analgesia but cost is an issue.	62	23	16
7. Quality Assurance rules limit the use of analgesic drugs in cattle.	29	53	18

Their responses to questions 2 - 4 show practitioners believe analgesic drugs are beneficial.

Responses to questions about sole ulcers and pain management in the recent Ontario survey were similar to those at the Guelph meeting. In the Ontario survey, 55% of respondents assessed the pain level when treating sole ulcers using their method of analgesia as 5 or greater on a 10 point scale (**Figure 3**).

Within each pain rank from 1-10, the percentage of Ontario practitioners using analgesics "frequently" ranged from 29-100% (**Figure 4**).

Questions 6 and 7, Table 1, probably give some insight into what drives decisions to use or not use analgesia. Veterinarians must balance between what is best for the producer and for the cow. When doing so, they may have a conflict between professional responsibilities to the cow and the producer. Fully 62% of respondents believe "farmers would like cattle to receive analgesia but cost is an issue." For farmers and veterinarians, cost may be an indefensible argument because popular ethics may not support employing painful procedures during treatments.

Using data from the Ontario survey shown above, 83% of participants at the Guelph course scored their use of analgesia for sole ulcer treatments as fair or poor (**Figure 5**).

Data from a survey of Ontario practitioners, presentations by visiting lecturers and discussions amongst peers stimulated several practitioners at the Guelph meeting to evaluate their pain management practices. In the future, their cattle patients should receive a greater level of pain management. Continuing education programs focusing on pain management could be beneficial to veterinarians, farmers, technicians, claw trimmers and cattle in their care.

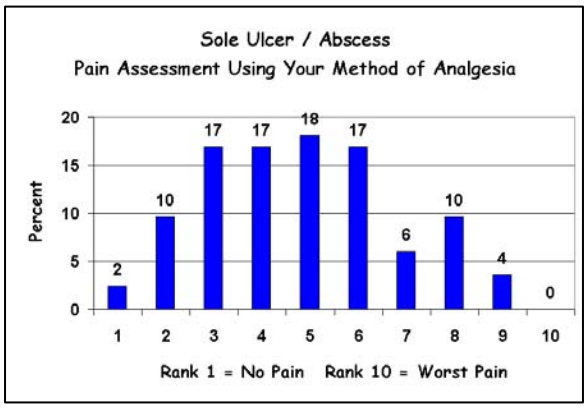


Figure 3

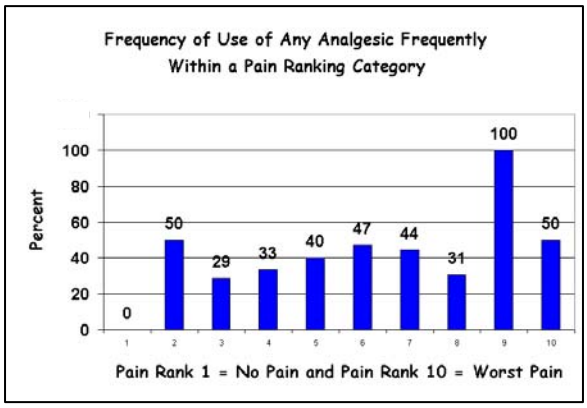


Figure 4

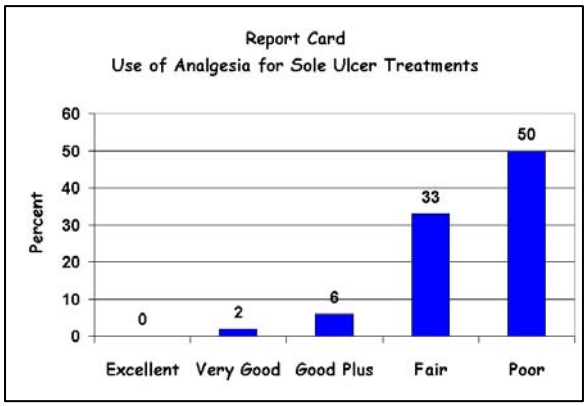


Figure 5

Acknowledgements

Tim Blackwell, Ann Godkin, Jocelyn Jansen, Kathy Zurbrigg, Ora Zondervan, Mary Vanden Borre, and Jenny Montgomery assisted with a survey of Ontario practitioners. Practitioners gave generously of their time to pre-test the survey and provide data.

Broiler Heat Stress Project, Part 2

Babak Sanei, Animal Health and Welfare, OMAF

The heat stress project studying broiler farms in Ontario was conducted in two stages. A brief introductory survey was sent to all Ontario broiler producers in October 2002 in order to capture baseline information with respect to the structure of broiler barns, extent of the heat stress problem and to identify producers that are willing to participate in the second part of the study. More than 300 producers responded to the survey. Information from this stage was reported in the July 2003 CEPTOR.

During the second phase of the study (summer 2003), 63 broiler farms were selected in Ontario. Most of the selected farms were visited and questionnaires were completed during interviews with the producers. Measurements were made to calculate relevant ventilation parameters. For statistical analysis, selected farms were divided into two groups, those that experienced heat stress (HS+) and those with no obvious problem (HS-) during the summer of 2002.

The following is a summary of the highlights of the project.

1. The average mortality of flocks that experienced heat stress (HS+) was 6.9% and the average mortality of those without heat stress problems (HS-) was 3.7 percent. In some extreme cases in the HS+ group, mortalities as high as 17.5 percent were recorded; however, in the majority of cases (>75%), the average losses in the HS+ were less than 6.4 percent.

2. Greater than 75% of the HS+ flocks reported their HS losses as occurring between 38 and 56 days of age. This indicates that birds at older ages, especially those close to market age, are more vulnerable to heat stress. This is partially due to increased flock density, better feather coverage and a smaller surface area in older birds.

3. The most prominent difference between the two groups of flocks (HS+ vs HS-) related to ventilation efficiencies. The average values of major ventilation parameters, such as CFM/ bird and the total air changes/minute were lower in the barns that had the history of heat stress.

Highly Pathogenic Avian Influenza – Information Update, May 2005

Paul Innes, Office of the Chief Veterinarian, OMAF

Eastern Asia (H5N1)

Recent reports from China indicate the H5N1 virus may have spread even further than earlier thought. H5N1 has been found in samples from a migratory bird sanctuary in central China, where more than 1000 geese, ducks, gulls and cormorants have been found dead. It is not clear yet if the H5N1 was the cause of death in any or all of these birds, but it does show how quickly the virus can spread with the movement of birds, wild and commercial, and people.

Since late 2003, several countries in Eastern Asia have been dealing with outbreaks of HPAI (H5N1). The virus has affected many different species, including chickens, geese, ducks and wild waterfowl. Millions of commercial poultry have been culled, causing significant economic and social impacts in the region. It has also spread to humans, resulting in more than 50 deaths. The World Health Organization (WHO) is very concerned that the virus may combine with a human influenza strain and lead to a pandemic. The WHO believes this virus is now established in the region, and it will take several years of concentrated effort to bring it under control. This will mainly involve surveillance, vaccination, and strict biosecurity measures throughout the poultry industry.

Canada

In 2004, the Canadian Cooperative Wildlife Health Centre (CCWHC), with funding from the Ontario Government and the Poultry Industry Council, tested more than 400 cormorants culled from Lake Ontario for AI virus and Newcastle virus. All samples were negative.

Over the winter and spring of 2005, veterinary laboratories have isolated H3 influenza viruses from swine in western Canada and Ontario. They have also been detected in turkeys in British Columbia. No clinical disease has been reported in birds or humans from this strain, but it underscores the ease with which influenza strains can cross the species barrier and possibly mutate or reassort to create a strain with poultry or human health significance.

The Ontario Animal Health Surveillance Network, through OMAF, the Animal Health Laboratory (AHL) and the Canadian Food Inspection Agency (Ontario), continue to monitor these and other disease threats to the Ontario poultry industry. Expertise and advice are available from OMAF, AHL and CFIA veterinarians with respect to biosecurity, Foreign Animal Disease (FAD) emergence and diagnostic testing.

High Security All the Time

Important hazards, such as Avian Influenza virus, can be present in wild bird populations, and in imported pet birds. It is important for poultry producers, veterinarians and industry personnel to maintain strict biosecurity at all times, regardless of when and where outbreaks are being reported. **Biosecurity is everyone's responsibility everyday**.

Producers should consult their veterinarian for appropriate advice and resources. The BC Poultry Association has recently published a Biosecurity Manual, "Vigilance Should Be Constant." This comprehensive resource is available from the British Columbia Ministry of Agriculture, Food and Fisheries site at www.agf.gov.bc.ca/poultry/publications/biosecurity.htm Veterinarians, including those dealing with exotic or wild birds, should be vigilant for signs of Avian Influenza and other FADs, and submit appropriate samples from any suspected cases to the AHL for diagnosis. If AI is suspected, the local CFIA district veterinarian should be consulted.

Master Hoofcare Technician Program

Brian Keith, Ontario Veterinary College (OVC), University of Guelph

OVC students are keen on gaining experience in all aspects of bovine practice before we graduate. We are currently organizing electives for our final year. We want to participate in the Master Hoofcare Technician Program offered by Dr. Jan Shearer of the University of Florida, Gainesville. To do this we need to have a minimum number of guaranteed participants. We are looking for 3 or 4 interested bovine practitioners that would like to join OVC 4th-year students who want to take this as an external rotation for the DVM degree. Participants will be trained in basic, as well as advanced, bovine foot care and claw trimming procedures, and will learn about hoof diseases, corrective trimming, the biomechanics of hoof weight-bearing and claw amputation.

The 5-day course costs $750 US, plus travel and accommodations at the Cabot Lodge in Gainesville, Florida. The dates of the course have not yet been confirmed, as it is specifically offered for OVC students. It will be some time between January and April, 2006. At this time we are looking for practitioners that are interested so that we can collectively agree on a date. All interested practitioners can log onto www.vetmed.ufl.edu/lacs/masterhoofcare/ for more detailed information on the course, and can contact Brian Keith (OVC 2006) at keithb@uoguelph.ca or (519) 836-8372.

Deadstock Disposal in Ontario

Leslie Woodcock, Animal Health and Welfare, OMAF

There are an estimated 80,000 metric tonnes of deadstock generated on farms in Ontario each year. In 2004, between 25,000 and 30,000 metric tonnes were collected by the 9 licensed deadstock collectors. The collectors, serving most of Southern Ontario, recover the hides and send the remainder of the material for rendering.

Until recently, producers and deadstock collectors were paid for the material by renderers who used carcasses to produce tallow and meat/bone meal. This was sold to a variety of markets in Canada and abroad. However, the finding of BSE in a Canadian cow in May 2003 resulted in the implementation of fees by renderers that were passed down to producers by deadstock collectors. The cost to livestock producers for deadstock collection (and rendering) has increased and continues to fluctuate, depending on available markets. Fees range from $30 to $50 in Southwestern Ontario to a one-time high of over $150 per mature bovine in Eastern Ontario in 2004.

Since December 2000, the Ontario Government has provided $9.5 million to assist with maintaining a deadstock collection system providing affordable service. The funds have been distributed through the Healthy Futures for Ontario Agriculture Program and the Bovine and Livestock Mortality Recycling Programs. The three programs have been administered by the Ontario Cattlemen's Association and managed by representatives of livestock organizations. This funding is expected to be expended by early 2006.

In his report, 'Farm to Fork: a Strategy for Meat Safety in Ontario', Justice Haines made several recommendations about managing meat production waste (including deadstock). A key recommendation was the collaboration with stakeholders to develop a long-term strategy to develop a system that is sustainable and will ensure that the wastes from abattoirs and deadstock are managed safely from health and environmental perspectives. The Ontario Government has committed to implementing all recommendations from the Haine's Report. Implementation plans for long-term strategy development are being developed.

Continuing Education/Coming Events

June 22, 2005	Ontario Association of Swine Veterinarians annual meeting. Ontario Pork Congress, Stratford fairgrounds (afternoon).
June 22 & 23, 2005	Ontario Pork Congress, Stratford fairgrounds. (519) 625-8811, Fax: (519) 625-8878, e-mail: opc@orc.ca www.porkcongress.on.ca/2005/index.php
July 12 - 13, 2005	National Mastitis Council (NMC) Regional Meeting, Sheraton Hotel, Burlington, Vermont. www.nmconline.org
July 13 - 16, 2005	57th Canadian Veterinary Medical Association Annual Convention, Victoria, British Columbia. canadianveterinarians.net/professional-convention-highlights.aspx
July 16, 2005	American Association of Small Ruminant Practitioners' (AASRP) Annual Meeting, held in conjunction with the AVMA Annual Convention.
July 16 - 20, 2005	142nd American Veterinary Medical Association (AVMA) Annual Convention, Minneapolis, Minnesota. avmaconvention.org/
July 20 - 22, 2005	The World Equine Airways Symposium (WEAS), University of Cornell, Ithaca, New York. www.vet.cornell.edu/weas/
July 24 - 28, 2005	American Dairy Science Association, American Society of Animal Science, Canadian Society of Animal Science 2005 Joint Annual Meeting, Cincinnati Convention Center, Cincinnati, Ohio. www.fass.org/2005/
July 31 - Aug. 5, 2005	American Association of Equine Practitioners (AAEP) Continuing Education Meetings. Focus 2005: Equine Colic concurrent with the 13th Annual Practice Management Seminar. Followed by the 8th International Equine Colic Research Symposium, Hilton Quebec, Quebec City. AAEP office (859) 233-0147, e-mail: aaepoffice@aaep.org, www.aaep.org/ Early registration deadline is July 15, 2005.
Sept. 13 - 15, 2005	Canada's Outdoor Farm Show, Woodstock, Ontario www.outdoorfarmshow.com/
Sept. 16, 2005	Ontario Large Herd Operators' 2005 Fall Mini-Bus Tour in association with the Outdoor Farm Show, Woodstock, Ontario. www.lho-ontario.ca/tours.htm
Sept. 22 - 24, 2005	American Association of Bovine Practitioners Annual Meeting, Salt Lake City, Utah. (includes sessions with the AASRP) www.aabp.org
Oct. 23 - 26, 2005	Agriculture's Role in Managing Antimicrobial Resistance - The Road to Prudent Use. Toronto Airport Marriot Hotel, Toronto, Ontario www.gov.on.ca/OMAF/english/livestock/vet/pubhealth.html
Nov. 3, 2005	Ontario Association of Bovine Practitioners' Veterinary Continuing Education Meeting, Holiday Inn, Guelph. Program will be posted at www.oabp.ca
Nov. 3 - 10, 2005	109th United States Animal Health Association Annual Meeting, Hershey Lodge and Convention Center, Hershey, Pennsylvania. www.usaha.org
Nov. 25 - 27, 2005	Ontario Equestrian Federation Annual Conference, Nottawasaga Inn, Alliston, Ontario. www.horse.on.ca/news/2005_conference/2005_conference.html
Dec. 3 - 7, 2005	51st Annual American Association of Equine Practitioners Convention, Seattle, Washington. www.aaep.org

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Wellington Place, R.R. # 1, Fergus, Ontario N1M 2W3
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Comments: .....

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Deadline for next issue: August 15, 2005

Ontario
Ministry of Agriculture and Food

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