Dairy Newsletter

CALF HEALTH MEETING with Dr. Ray Reynen

132 Commerce Park Drive, Unit N
Barrie ON L4N 8W8
705-722-3232
info@centralontariovet.com

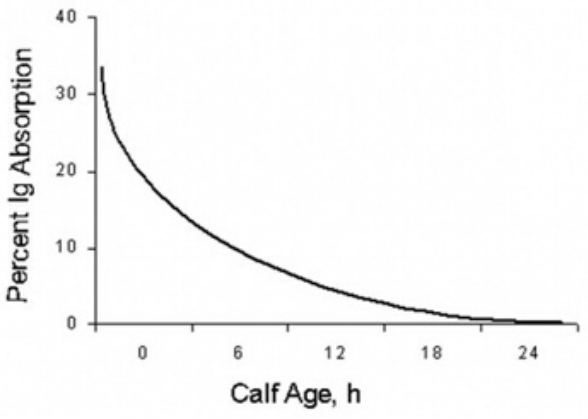
Jan/Feb 2020

Near the end of January, Central Ontario Veterinary Services had the pleasure of hosting Dr. Ray Reynen of Merck Animal Health for an interactive and productive discussion with our Dairy producers. The information provided during this session was extremely valuable to our producers, so we have gathered most of what was discussed in order to provide the information more widely.

Colostrum

Colostrum management is critical for producing healthy calves. Getting high quality colostrum into calves in a timely fashion will provide them with the foundation they need to build a functional immune system. When they are first born calves have an “open gut”, which allows them to absorb the large proteins (immunoglobulins/antibodies) that will serve as their only defense against infection until their own immune system starts producing antibodies. Gut closure is triggered by a calf putting things into its mouth, whether that is quality colostrum or dirty bedding. It is therefore important that calves get quality colostrum very shortly after birth. We also know that their ability to absorb antibodies out of colostrum decreases to 66% at only 6 hours after birth. At 24 hours after birth they will only be able to absorb 11% of the antibodies given to them. We therefore recommend getting 200 grams of immunoglobulins (roughly 4 L of quality colostrum) into a Holstein

calf as soon as possible after birth. We know that allowing a calf to get its colostrum via a bottle is better than tubing; however, we are dealing with such a short time frame to get an adequate quantity of immunoglobulins into the calf, so if the calf will not take the full 4 L from a bottle, it is often better to tube the rest of the colostrum into them vs. delaying the second feeding until 6 hours post birth.



If you are uncertain if your colostrum management is effective, we can survey calves 1-7 days of age. We would collect blood from ideally 10 calves and measure the amount of immunoglobulins present within the blood. We can then get an idea of what percentage of calves are getting adequate protection from the colostrum they are being given.

Colostrum can be provided to calves in a variety of forms. This includes fresh colostrum from the cow that just calved, frozen colostrum you have stored from cows that calved previously on your farm, or commercial powdered colostrum available from your veterinarian.

Fresh Colostrum

It is important to know that the quality of colostrum the cow produces declines very rapidly once she has calved. This rapid decline happens even if the colostrum is left within the cow's udder.

Colostrum that is collected within 2 hours of calving is considered the highest potential quality. If you wait 6 hours to milk that colostrum from the cow, it will have lost 17% of the potentially available antibodies. Waiting 10 hours will result in a 27% loss. Practically, this means that if the colostrum is not collected and fed to the calf within 2 hours of birth, you will need to feed more volume to get the same amount of antibodies into the calf.

- Waiting 6 hours will mean you need to feed 4.8 L to get the same quantity of antibodies.
- Waiting 10 hours will mean you need to feed 5.5 L to get the same quantity of antibodies.

Because the maximum meal size you can feed a Holstein calf is 4 L, delay will mean that you need to give an increased volume of colostrum over two feedings while the calf's ability to absorb this colostrum is decreasing rapidly.

Frozen Colostrum

Colostrum can be collected from cows that calve out on farm. It can then be frozen and stored so it is available to future calves. As a rule, the best colostrum to freeze will be from your second calvers. They will have had a chance to develop immunity to the bacteria/viruses commonly found on your farm and they should not be producing such high volumes that the colostrum is rapidly diluted.

If you are going through the trouble of freezing colostrum, you should make sure that it is of high quality. You evaluate colostrum quality with a Brix refractometer, and any colostrum with a reading of 22% or higher can be frozen. Colostrum with a Brix reading of 22% will have 200 grams of immunoglobulin in 4 L of colostrum. It is a good idea to label your frozen colostrum with the Brix reading you obtained. This information provides you with the ability to customize your colostrum management and feed really high quality colostrum to at risk calves.

To increase the usability of frozen colostrum, freeze it in volumes between 500 mL – 1 L. This will allow you to thaw it more quickly than if you freeze the whole 4 L together. Each container of frozen colostrum should be placed into its own pail of lukewarm water. You should be able to comfortably submerge your hand in the water. Water that is any hotter risks damaging the antibodies within the colostrum. Thawing colostrum this way should take about an hour.

Commercial Colostrum

There are a variety of commercial bovine colostrum products available on the market. Their convenience can make them an attractive option. Remember that the antibodies will not be tailored specifically to your farm as they would be if you use colostrum from cows raised on your property. It is also important to ensure that you are getting the 200 grams of immunoglobulins into each calf. These products come in both 50 g and 100 g packages, meaning you will need to feed 2-4 packages to a calf that has received no colostrum from another source. We recommend using only the 100g packages.

Environment

The second most important factor in producing health calves is their environment. There is a temptation to leave the calf with the cow and while this does have some benefits, we should also be aware of the potential risks.

· If the calf is left to nurse off of the cow you have no way of knowing how much colostrum that calf took in and how quickly it did so.

· Leaving the calf with the cow dramatically increases that calf's exposure to environmental pathogens. The manure produced by the cow will contain a large quantity of E. coli. This will serve as a potential source of infection for the calf.

Calves should be promptly moved into a clean, well bedded area where they will not come in contact with manure produced by mature cows. This will dramatically reduce the contamination of their environment. We know that even an excellent colostrum management program can be overwhelmed by high environmental contamination.

Medications

Many problems with sick calves can be addressed through colostrum and environmental management. In farms with excellent programs there is often little need for vaccinations or scour boluses; however it is hard to be perfect all the time, and there are some strategies you can use to help you raise healthy calves.

Cow Vaccines

Cows can be vaccinated ahead of calving to stimulate their own immune systems to produce antibodies against common diseases. These will then be transferred into the colostrum and on to the calf. The timing of these vaccinations is important. The recommendation is typically 1-2 months before calving this gives the cow time to produce the antibodies and get them into her colostrum.

There will be no additional benefit to vaccinating cows if the colostrum is not getting into the calves in a timely manner.

Monoclonal Antibody Products (eg. First Defense)

First Defense boluses contain preformed antibodies to E. coli, coronavirus and rotavirus, three of the most common causes of diarrhea in young calves. First Defense can be given to calves at the time of birth, and they will absorb these antibodies through the same process that they absorb the antibodies found in colostrum.

Vitamin E/ Selenium

Vitamin E and selenium have very important functions within the immune system. A study has proved that calves given Vit E/Se at birth will have fewer episodes of scours as a result of rotavirus infection. It is therefore good practice to give every calf a dose of Vit E/Se at birth. There are a variety of products on the market; make sure that you are following the label for the product that you are using.

Dipping Navels

The umbilicus can serve as an entryway into the body for environmental bacteria/viruses. Decreasing environmental contamination is the most effective way to prevent an umbilical infection. An adjunct to a clean environment is to dip navels in iodine. Iodine has disinfecting properties and if used at a high enough concentration it will also have a drying effect with makes the umbilicus a more hostile environment for pathogens. You want to use 7% tincture of iodine for dipping navels.

Pneumonia

Pneumonia is commonly seen in calves around weaning. This is often because the weaning is not done properly and it results in physiologic stress in the calves. This leaves them susceptible to the bacteria and viruses that cause pneumonia. See the **nutrition** section following for Dr. Reynen's recommended weaning protocol. If pneumonia is still a problem in your calves despite appropriate weaning protocols, there are some vaccines that can help give the calves protection against the common viruses and bacteria.

Inforce 3 - a modified live vaccine that protects against bovine respiratory syncytial virus (BRSV), infectious bovine rhinotracheitis virus (IBR) and parainfluenza virus (PI3).

Once PMH - a modified live vaccine that protects against Mannheimia hemolytica and Pasteurella multocida.

Both of these vaccines can be administered at birth to give the calf immediate protection. The one downfall of these vaccines is that they don't last a particularly long time. The immunity they provide is typically waning within 30-60 days. If you have a pneumonia problem in the older calves a booster can be given right before weaning to offer further protection.

Nutrition in Calves

Nutrition remains an important component of calf health even after we have gotten an appropriate amount of high-quality colostrum into calves. Dr. Reynen has a wealth of knowledge when it comes to dairy nutrition and was kind enough to share with our clients.

Here are some of the important points that were brought up during the discussion:

- By a week of age most Holstein calves will readily drink 3 L of milk twice daily. While it is possible to keep feeding a calf 3 L twice daily until weaning, it would be ideal for them to get volumes closer to 4 or even 5 L of milk twice daily as they get bigger.
- If you have an automatic calf feeder for your calves, it is a good idea to feed them milk replacer from birth. If you have them on whole milk while they are still being hand fed and then switch them to milk replacer when they move onto the automatic feeder, this can result in too many simultaneous stresses and cause a decrease in immune function.
- When using milk replacer it is very important not to give more than 500 grams of powder in a single feeding. If you routinely go over 500 grams you will see problems with bloat and death in calves.
- When transitioning calves to a calf starter it is important to provide them with access to fresh water. For every 1 kg of calf starter the calf consumes it will want to drink 3-4 L of water. You can often increase the volume of starter a calf will eat simply by providing fresh water.

Continued on the next page...

Nutrition Continued

- Calves are ideally weaned around 56 days of age (42 days of age at the earliest). It is also advisable to take 14 days to fully wean a calf. On the first day of the weaning process make a substantial drop in the volume of milk (~20%), this will motivate the calf to consume more calf starter. From there you should gradually decrease the volume of milk down to a minimum meal size. In Holstein calves a good minimum meal size is 2 L. Dropping below this minimum meal size can promote cross-sucking.
- Feeding ensiled feed before 4 months of age will actually decrease a calf's forage intake. It is best to wait until at least 6 months of age to introduce ensiled feed.
- If you have any cow left overs the ideal place to feed them is to your 4-6 month old heifers. Do not give cow left overs to breeding age heifers.

Increasing the level of Vitamin E and Selenium in the starter ration will help out the calf. Dry cow rations should also contain Vitamin E and Selenium. This will result in fewer cases of retained placenta, and healthier cows. Healthy cows calve successfully and make better colostrum.

We are very grateful to Dr Reynen for lending us his time and expertise. If there are any topics you are interested in learning more about, please let us know at info@centralontariovet.com.

Central Ontario
VETERINARY SERVICES
www.centralontariovet.com

To set up a herd health appointment, please contact our office by telephone 705-722-3232 or email info@centralontariovet.com