

NAVAN VETERINARY SERVICES – JUNE 2012 NEWSLETTER

The importance of colostrum management and calf nutrition is a subject that has been discussed previously, but there are some relatively new long term effects of proper calf feeding worth repeating.

It is estimated that pre-weaning mortality rates for dairy calves in the US and Canada range from 8-11%. Of these lost calves, 53% are due to diarrhea (scours) and 21% are due to respiratory disease. The only way the newborn calf can acquire protection from these diseases (other than from vaccines) is by ingesting antibodies from the dams colostrum. Failure of passive transfer (FPT) is the term used to describe the inadequate transfer of antibodies to the calf from colostrum. This can occur for several reasons including not feeding adequate amounts of colostrum feeding, poor quality colostrum or feeding colostrum that is contaminated with bacteria.

Studies investigating preweaning calf mortality show that approximately 31% of deaths in the first 3 weeks of life were due to FPT. Antibodies (mainly IgG) are only one component of colostrum that is critical for calf health and growth. Many other factors in colostrum help stimulate the young immune system, including growth factors, hormones and enzymes that protect the antibodies. The growth factors and hormones in colostrum are now thought to be involved in the expression of genes involved with weight gain and reproductive and mammary gland development.

Any herds with ongoing early calf scours, pneumonia or simply poor doing calves need to determine if FPT is an issue. Testing for FPT is a very easy procedure, involving taking a blood sample from a group of calves 24 hrs to 7 days old. The level of total protein (TP) in the blood is determined at the clinic. The goal is to have 90% of calves with TP >5.5g/dl. Results are always interpreted on a group level rather than on an individual calf level.

There are 5 Q's of colostrum management. Quality, Quantity, Quickness, Squeaky clean, Quantifying passive transfer (monitoring). We know that the quality of colostrum is highly variable.

Factors that affect colostrum quality that we can manage include dry cow nutrition, excessively long (>90 days or short <21 days) dry periods, delay from calving to colostrum collection and vaccinations during the dry period (especially the scour vaccines)

If 1st milking or harvesting of colostrum is delayed by 10 hours, antibodies are reduced by approx. 25%. A reasonable goal is to harvest colostrum as soon as possible, but no longer than 6 hours after calving. The same test used to measure antibodies in calf blood can be used to measure the quality of colostrum. Samples can be submitted to the clinic for assessment. The goal is to have colostrum IgG levels at >50 g/l.

The second "Q" – quantity, is a direct reflection of quality. If the goal is to have the calf blood levels at >5.5 g/dl TP we need to feed 150-200g IgG. Feeding at this level will ensure 95% of calves will achieve desired blood levels. The rule of thumb for natural colostrum is to feed 10% of body weight at 1st feeding.

Quickness, the third Q of colostrum management is important on several levels. Gut closure (the ability of fed antibodies to be absorbed into the blood) in the calf is complete by 24 hrs. The goal is to feed within 1-2 hrs. If you are warming frozen or chilled colostrum it is critical to not heat > 140°F (60° C) thawing at 120-125°F (50°C) is recommended to prevent damaging of proteins and antibodies.

Squeaky clean (bacterial contamination) the 4th Q is often overlooked on many farms. Contamination can come from one of 3 areas 1) infected udder or manure contamination, 2) contaminated collection, storage or feeding equipment 3) bacterial growth in stored colostrum.

Bacteria in colostrum can cause disease directly (scours) or indirectly. Research has shown that bacteria in the gut of newborn calves can interfere with the actual absorption of antibodies across the gut into the blood.

Have a look under the lid of your pail milkers, are they as clean as the rest of your pipeline?

Not allowing the calf to suckle the dam will help reduce the risk of bacterial ingestion including Johne's bacteria. Refrigerating colostrum only slows down the growth of bacteria. Try to feed cooled colostrum within 48 hrs.

It is not possible (or necessary) to feed sterile raw colostrum. Even with pasteurizers, we are only trying to reduce bacterial numbers to safe levels.

The goal is to have <100,000 bacterial/ml and perhaps <5,000/ml of these as coliforms. We need only keep the scales tipped in favour of the calf. Bacteria multiply very quickly in milk or colostrum stored at room temperature (or quicker at milk room temperature)

Feeding colostrum collected within 1-2 hours will help ensure low levels of bacteria.

Have a critical look at all feeding pails, mixing buckets and utensils.

Are we challenging calves every time we feed them? A 2007 study in Minnesota & Wisconsin showed that 93% and 82% of colostrum samples had greater than 100,000 bacteria/ml.

The final Q, (quantifying cow monitoring) the management program is achieved by routinely testing calves to ensure they are receiving enough antibodies. This could be a routine part of your herd health visits, where every 2nd or 3rd month, blood samples are taken on a group of calves and total blood protein are measured.

The next CQM meeting will be held at the Vet Clinic on June 19 (subject to change if not enough people are interested). Don't forget you need 3 months of records prior to your date. Anyone with fall CQM dates should consider attending. Please call the clinic for confirmation.