Colostrum Management: From Cow to Calf

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Colostrum is the most important meal of a calf's life. It has lifelong impacts on the calf's health, including the incidence of navel/joint ill, scours, and weaning weights. Compared to milk, it contains much higher levels of energy, protein, vitamins and minerals. Colostrum also has hormones specific for calf development and antibodies, or immunoglobulins (such as IgG), that are responsible for protecting the calf as its immune system develops. IgG is absorbed from the calf's gut directly into the bloodstream to provide protection. Since the calves don't begin to develop an active immune system until about two weeks of age, it is essential that they receive colostrum to protect them during this vulnerable time. An effective colostrum management program focuses on getting enough clean, high quality colostrum into the calf within a few hours of birth.

What is enough colostrum?

A healthy calf in good weather will stand and nurse within the first two hours of life. A calf should receive 10% of its body weight in colostrum in the first 12 hours of life, with the first 5% (2-3L) in the first 4 hours. The mothering ability of the cow is crucial, so it is important to supervise the cow after calving to ensure that she accepts the calf and allows it to nurse enough colostrum. It is especially important to monitor heifers as they are less likely to mother the calf in a timely manner. If a cow is not accepting a calf, or if the calf doesn't look full, then it is necessary to intervene. Powdered colostrum replacers are available and should be used when the cow is uncooperative or if she has inadequate colostrum.

Calves that were stressed from a long/difficult calving, are meconium stained, or are born in bad weather are unlikely to stand and nurse quickly, and are therefore at a higher risk of illness and death. If the calf is not standing within 2 hours of birth, an esophageal feeder should be used to tube 2L of colostrum replacer into the calf's stomach. You can also give the calf a 5-hour energy drink as the caffeine boost helps to stimulate them and get them sucking.

You can check if calves are getting enough quality colostrum using a quick blood test that can be run at the vet clinic. Blood is taken from healthy calves 2-7 days old and the protein level is checked to see if they absorbed enough IgG. If calves are failing this test, it is important to discuss colostrum management protocols with your veterinarian.

What is clean colostrum?

Cows need to be clean when they calve so that their udders and flanks are not contaminated with manure and tag. The first meal a calf should have is colostrum, not manure. As the calf searches for the teat, he can nose around the flank and contact bacteria first. Eating bacteria interferes with the calf's ability to absorb IgG from colostrum and lets bacteria invade the bloodstream. This can lead to joint/navel ill or scours. Stocking density

of the cows is a key consideration. High stocking densities will make it difficult to keep the pen clean and will stress the cows, so it is important to not overcrowd the calving area. Clean the area out regularly and bed with long, deep straw. This will keep the pathogen load in the environment at bay and keep cows cleaner. For cows calving on pasture the same concept should be applied: keep newborns on clean, dry ground. This can be accomplished by having a tight calving window and rotating pastures, such as with the Sandhills calving system.

Maintaining a tight calving window in any management system will help as it avoids a wide age gap between calves. Think of it as an all-in all-out system where we want to avoid older calves contacting and passing germs on to younger calves.

What is quality colostrum?

Maximizing colostrum quality begins with the cow. It is crucial to focus on both cow nutrition and vaccination. Energy and protein are the most important macronutrients for fetal growth and colostrum development in the last 3 months of gestation. Cows should be in body condition 5 to 6 out of 9 at calving. A cow who calves in ideal body condition will not only produce quality colostrum, but will also have fewer calving problems and produce a more vigorous calf. Thin cows have less colostrum and a higher stillbirth/weak calf rate and fat cows have trouble giving birth. In the last two months of gestation, ration crude protein levels should not be less than 10% for proper calf and colostrum development. Low protein results in poor colostrum production and weak calves.

Vaccinating cows with a scour vaccine helps boost colostrum quality by producing specific antibodies (IgG) in the colostrum to protect the calf from pathogens like E.coli, Rotavirus, and Coronavirus. These vaccines must be timed carefully to be effective. Colostrum is made in the last 3-5 weeks before calving so a single dose given too far out or too close to calving will not be effective. Develop a vaccine program with your veterinarian to manage this timing.

It is important to note that heifers naturally have lower colostrum quality than cows because they've had less exposure to diseases in their lifetime. They also don't produce as much colostrum. To manage this, in addition to nutrition and vaccination, it is advisable to calve out the heifers before the cows. That way the calving area is cleanest for the calves at highest risk.

As soon as the calf is born, the cow starts switching over from colostrum production to milk production. This means the calf needs to get that colostrum in the first 4 hours of life, not only to absorb the IgG before the gut closes, but also because colostrum quality deteriorates very quickly. Therefore, to get as much protection as possible, the importance of monitoring calves for suckling in the first few hours of life cannot be stressed enough.

Managing colostrum is all about planning: planning for cow nutrition and vaccination; planning for clean housing and calving areas; and planning on getting enough good colostrum into the calf.