

Calving Ease

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Avoiding Passive Transfer Failure

- **Don't guess; use hard numbers. Use a minimum of blood samples from 12 calves; more samples give a better estimate of passive transfer rates.**
- **Once the failure rate is established get hard numbers for critical control points: calf age at first feeding, quality and quantity of colostrum fed.**
- **Write protocols, train calf care workers to follow protocols, monitor protocol compliance.**
- **Test, test, test. Keep sampling blood until the passive transfer failure rate drops to the farm's goal.**

A Success Story

This was in 2010. The first round of blood serum total protein results were: (for more on blood serum total protein see www.calffacts.com and select "Testing for Passive Transfer of Immunity")

At 6.0 (5)	24%	(number of calves tested)
Between 5.5-5.9 (5)	24%	
Between 5.2-5.4 (1)	5%	
Between 4.5-5.1 (2)	29%	
Between 4.0-4.4 (4)	28%	

Note that 57 percent of the samples were below 5.2. Not good. Even worse - the 28 percent that were below 4.5. These very low calves are at very high risk for illness in the first 30 days of life. However, note that 48 percent of the calves had acceptable blood serum total protein levels. Twenty-four percent had values of 6.0 – these represent excellent passive transfer of immunity

For comparison, DCHA national blood serum total protein standards for a commercial dairy expecting average calf health are:

At or above 5.5	80% (This dairy = 48%)
At or above 5.2	90% (This dairy = 52%)

Conclusion? Colostrum management program was not working consistently. It worked well for about one-half of the calves. For nearly three calves out of ten it was working very poorly.

Something had to be fixed. Where did we start? The three **Critical control points** are:

- (1) How soon after birth is the first feeding of colostrum?
- (2) What quality of colostrum is being fed at first feeding?
- (3) What quantity of colostrum is being fed for first feeding?

My recommendations were:

1. Set up a protocol for measuring colostrum quality. Train staff to use the Brix refractometer on all colostrum ASAP after collection – mark quality on storage containers – use the highest quality available for first feedings.
2. Set up a system to record times when calves are born and when the first feeding of colostrum took place. Plan to summarize this information every week. If these goals are not met work out changes that will make better compliance possible.
3. Use the same record-keeping system for when colostrum is fed to record the volume of colostrum consumed. If esophageal-tube feeders are going to be used be sure to include adequate training for calf care personnel.
4. My recommended minimum volume goal is 4 quarts of colostrum (ten percent of live birth weight) within the first 4 hours of life. Regardless of whether the 4-quart volume is consumed in one or two feedings it is important to get accurate recording of actual volume consumed.

If a large volume (4 quarts) is fed in one feeding the method of feeding should not make a difference in the amount of antibodies that end up in the calf's blood. That is, either bottle-feeding or esophageal-tube-feeding gives the same results. If a small volume (2 quarts or less) is fed in two feedings the bottle-feeding method should give the better rate of antibody transfer compared to tube-feeding.

5. Test, test, test. Keep checking blood serum total protein levels. If the practices above are adopted successfully it is not unrealistic to have 90 percent plus over 5.2 and 80 percent at 5.5 and above.

Did these improvements work?

It took several years of persistent emphasis on colostrum collection, handling and feeding to achieve better passive transfer of immunity. These are the most recent (2017) results (same dairy as in 2010):

At 6.0 and higher (22)	65%
Between 5.5 – 5.9 (10)	29%
Between 5.2 – 5.4 (2)	6%
Less than 5.2 (0)	0%

One hundred percent at 5.2 and above – YES! WooHoo! Success is Sweet!

What changed?

1. All the colostrum is tested now – it's easy with the digital Brix – all the containers are marked.
2. Nearly all the calves are fed first feeding by 4 hours or sooner.
3. All the calves are fed 4 quarts first feeding, another 2 quarts between 6 and 12 hours later.
4. Regular testing is in place to confirm successful passive transfer.

If you know of someone that doesn't currently receive **Calving Ease** but would like to, tell them to **WRITE** to [Calving_Ease](mailto:Calving_Ease@rochester.rr.com), 11047 River Road, Pavilion, NY 14525 or to **CALL** 585-591-2660 (Attica Vet Assoc. office) or **FAX** (585-591-2898) or **e-mail** calvingease@rochester.rr.com with Subscribe as the subject. Back issues may be accessed on the Internet at either www.atticacows.com or www.calfnotes.com and clicking on the link, Calf Management Newsletter.

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