



Let's Talk Prevention

What Can We Do To Reduce the Level of Diarrhea?

1. MINIMIZING FAILED TRANSFER OF PASSIVE IMMUNITY

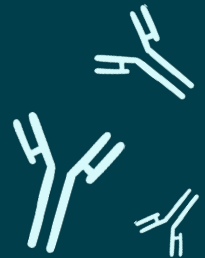
Colostrum management is talked about often, but continuing to highlight this practice is critical as it is the single most important management practice for calves. Ensuring that an adequate volume (8.5-10% of body-weight or 3-4L at first feeding) of high-quality colostrum (> 50 g/L or 22% on a Brix refractometer) is fed within 3 hours after birth is important to ensure intake of IgG, which is absorbed in the small intestine.

AN ADEQUATE VOLUME OF HIGH QUALITY COLOSTRUM FED QUICKLY AFTER BIRTH IS CRITICAL FOR NEW CALVES

What's the consequence of poor colostrum management?

Failing to follow the criteria above will lead to low levels of IgG being absorbed and the development of the condition called "failed transfer of passive immunity", historically defined as having < 10 g/L of IgG being absorbed into the calf's bloodstream.

If calves have < 10 g/L of IgG, they are nearly **2 times more likely** to develop diarrhea, highlighting the importance of colostrum management.



What is the latest research telling us?

Newer recommendations are suggesting **we should be striving for even higher levels of IgG**. The higher the levels of IgG, the lower the level of mortality and disease. The new guidelines and targets recommended by Lombard et al. are outlined below:

Category	Serum IgG (g/L)	Total Protein (g/dL)	% Brix	Target (% calves)
Excellent	≥ 25.0	≥ 6.2	≥ 9.4	> 40
Good	18.0 to 24.9	5.8 to 6.1	8.9 to 9.3	~ 30
Fair	10.0 to 17.9	5.1 to 5.7	8.1 to 8.8	~ 20
Poor	< 10.0	< 5.1	< 8.1	< 10

Colostrum is about more than just IgG!

What's often missing from the discussion about colostrum is the benefits beyond just the IgG that is provided. Colostrum is filled with **bioactives, hormones, and other components** that have a tremendously positive impact on the calf in terms of gut development and the bacteria present in the gut.



Colostrum really is liquid gold for your calves!

What about after the first colostrum?

Although the focus is often on the first feeding of colostrum, continuing to feed colostrum, transition milk, or a low level of dried bovine colostrum can also have substantial benefits in improving gastrointestinal health. In fact, recent research has found that **a second feeding of colostrum 5 to 6 hours after an initial meal** can reduce failed transfer of passive immunity and disease. It can also improve growth and even first lactation milk production.

2. PLANE & TYPE OF MILK NUTRITION

Feeding a high plane of milk nutrition in the pre-weaning period has been shown to have benefits including a **lower level of disease, improved immune function, and better recovery** from diarrhea. Beyond health benefits, a higher level of nutrition has also been shown to improve growth and feed efficiency, as well as improve mammary gland development leading to improved milk production.

**CALVES SHOULD BE FED
AT LEAST 8L OF MILK
PER DAY IN THE PRE-
WEANING PERIOD**

Simply put, providing a high plane of nutrition in combination with a gradual weaning program can have tremendous benefits on both **calf health and productivity** later in life.

What about the type of milk?

Beyond the plane of nutrition, it is also important to think about the type of milk calves are being fed. Specifically, the use of waste milk, defined as non-saleable milk that is harvested from treated postpartum cows, can have a negative effect on calf health. Recent research has shown that calves fed waste milk had a higher level of diarrhea and lower growth due to inconsistency in the levels of fat and protein. In addition, due to antimicrobials in the milk, calves fed waste milk were also more likely to shed bacteria that is resistant to common antimicrobials used on farms.



Based on these consequences, waste milk should be discarded and not fed to calves.

3. CLEANLINESS OF THE ENVIRONMENT

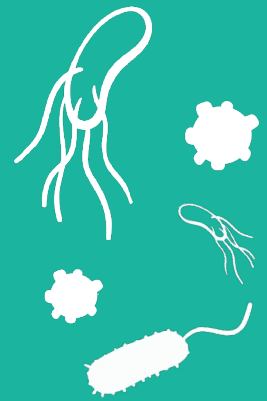
Now, you can do everything right when it comes to preventing failed transfer of immunity, giving transition milk, and putting calves on a high plane of nutrition; but if calves are put in a damp, cool, and manure laden environment, **diarrhea will still occur**. So, we need to ensure that calves are in a clean, comfortable environment that is dry and with no drafts, especially in the first few weeks of life.

Why is this so important?

Maintaining a clean environment will help minimize exposure to pathogens, such as rotavirus, coronavirus, *Cryptosporidium parvum*, *E. coli*, and *Salmonella*, which are the major culprits affecting calves.

To do this, clean and disinfect calf housing, feeding equipment, boots/ clothing and other equipment that comes into contact with calves. Don't forget to let them dry thoroughly too!

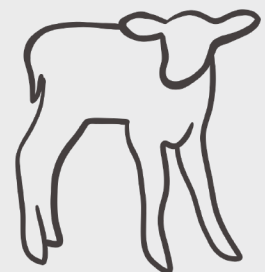
These steps are important to ensure that pathogens don't become cyclical, where contaminated housing and equipment infect new calves.



TAKE HOME MESSAGES

- ① Diarrhea prevention starts with colostrum management, which sets calves up for success.
- ② Providing a high plane of nutrition with high-quality milk helps the immune system function and increases the calves' growth.
- ③ Finally, cleaning and disinfecting equipment and housing that comes into contact with calves will reduce exposure to disease-causing pathogens.

If you are having trouble with calf diarrhea, consult with your veterinarian to develop strategies to combat this disease.



REFERENCES. Lombard, J., Urie, N., Garry, F., Godden, S., Quigley, J., Earleywine, T., ... & Sterner, K. (2020). Consensus recommendations on calf-and herd-level passive immunity in dairy calves in the United States. *Journal of dairy science*, 103(8), 7611-7624.

