

Colostrum: A Key to Calf Health



Colostrum: A K

What is Colostrum?

Colostrum is an essential ingredient to ensuring the best start to a calf's life. It is the calf's first feed from its mother, created in the udder in the 5 weeks before she gives birth. It is a wonderful and valuable source of nutrition having four times the protein and twice the fat in comparison to regular milk. It is also a rich source of important vitamins, minerals and other important factors for growth. Most importantly colostrum is a source of antibodies.

Antibodies, also called immunoglobulins, provide the immune system the ability to target viruses and bacteria which could or have caused disease (see Figure 2). They are present in the cow's blood due to exposure to various causes of disease over her life and as a result of any vaccinations she has received. During the last 5 weeks of a cow's pregnancy antibodies are actively concentrated in the udder from her blood system as colostrum forms. Present within colostrum, they are delivered to the calf as it drinks.

The benefit to calves of these antibodies within colostrum are maximized by being fed either by its mother or supplemented soon after birth. After the initial or first colostrum from a mother is removed after calving, although still present as part of cow's milk for 4 days, the antibody concentration is considerably reduced and therefore the benefits are now limited to its nutritional value.

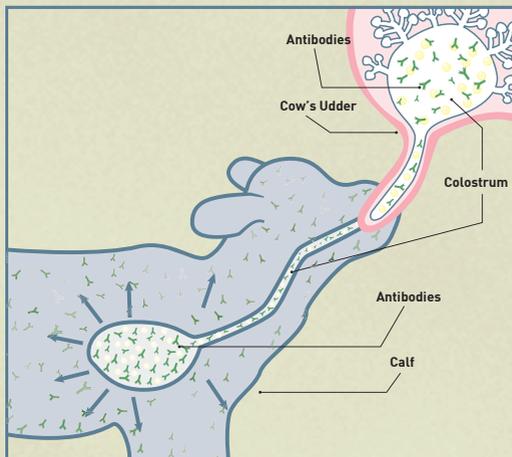


Figure 1: Illustration of passive transfer of antibodies through colostrum into the calf's blood.

Key to Calf Health

Colostrum and your Calves

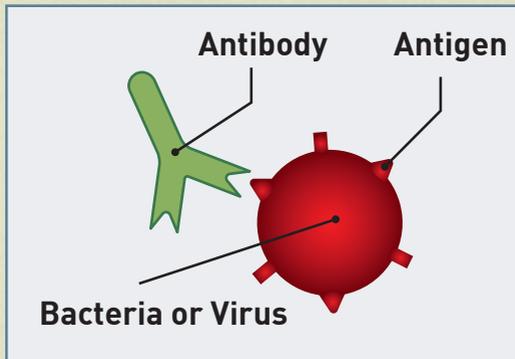
Colostrum is at its strongest concentration and highest quality at the point of calving. The antibodies contained within are a critical requirement of the calf's immune system which is underdeveloped at birth. Without colostrum as the source of antibodies, the calf's immune system will not be fully capable in the first month of life.

Passive transfer only occurs after the calf has been fed colostrum for its first feed (see Figure 1). Within the calf's intestinal tract antibodies from colostrum transfer passively into the calf's blood. This provides the calf with antibodies within its blood which it otherwise would not have, to recognise disease in early life. Passive transfer only occurs in the first 24 hours after birth and is most effective in the first 8.

When good colostrum is created and a suitable volume consumed sufficiently soon after birth by a group of calves, improvements in growth rates, reduced occurrence of disease and less severe disease across the group occurs. Successful colostrum management improves your profitability alongside the health of your calves.

Figure 2:

Illustration showing the binding of an antibody to a bacteria or virus, allowing the immune system to target the disease.



Success of An

Failure of Passive Transfer (FPT)

Failure of passive transfer is the scientific term that describes when a calf has insufficient protective levels of antibodies entering their bloodstream from colostrum by 24 hours after birth. Failure of passive transfer and the resulting deficiency of the immune system may have negative effects on both the short and long term health of affected animals.

The process of colostrum transfer requires.

- A mother to be well fed and of good body condition
- This mother to be healthy and create sufficient good quality colostrum for her calf
- A healthy calf sufficiently alert after birth to suckle or be fed
- The calf to drink from the mother or be supplemented sufficient volumes of this good quality colostrum early in life

Failure of passive transfer occurs when any of these steps is interrupted or not completed adequately.

Figure 3:

Showing the effect of time on percentage absorption of antibodies from the calf's stomach after birth.



Antibody Transfer

Measuring the success of colostrum transfer

The success of colostrum transfer from mother to calf in a group of calves can be measured by your veterinarian. Completing a simple blood test which assesses antibody levels can be completed on young, healthy calves in the first 10 days of life. Testing your calves is warranted if:

- Rates of preweaning disease, including diarrhoea or respiratory problems are beyond targets
- Targets for age and weights at weaning are not being met
- Cases of disease in calves are more often graded severe
- A disease outbreak has occurred in your calves
- To minimise risk and assess your colostrum management

Colostrum management should be discussed with your veterinarian. They will assist with not only a focus on disease prevention, but also calf growth and future production benefits from best practice colostrum and feeding management.



Maximising Y

Planning for good colostrum management

We can influence success of colostrum management using:

- Accurate predicted calving dates
- Appropriate cow body condition score for calving
- Nutrition for health and body condition
- Transition feed management from a dry to a lactating cow to minimize disease
- Develop a management plan to supplement colostrum if required
- Monitor the success of our colostrum management plan

Ensuring a cow is healthy during the 5 weeks before she calves is the first step in creating high quality colostrum. The management planning of cows as they transition from late pregnant, through calving and begin lactating together with colostrum management, to transfer colostrum from mother to calf, should be discussed with your veterinarian well in advance of the beginning of calving.

In heifers, ensuring an easy calving through using appropriate sires and only mating appropriately sized heifers provides a good start for both the calf and the first time mother. Good colostrum transfer from heifers needs to be monitored closely if there are concerns for calf health. If a heifer is coping poorly with motherhood then colostrum should be supplemented to her calf soon after birth.



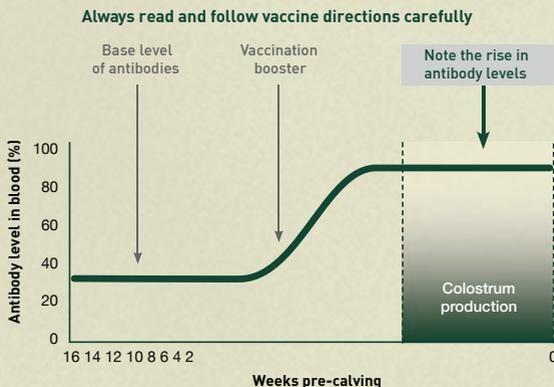
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Vaccines

Use of vaccines in cows can influence which diseases the cow's antibodies protect against. Where calves receive sufficient colostrum containing these antibodies early in life, these vaccines can provide an advantage to calf health by preventing certain diseases.

Discuss with your veterinarian the timing and use of single or multiple vaccines. They are most effective when used in healthy cows. Combinations of vaccines used together may result in interactions which reduce the efficacy of the individual vaccines.

Figure 4:
Effect of vaccination on antibody levels.



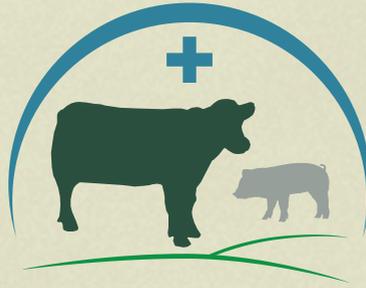
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Optimising the first few hours

Colostrum transfer best occurs in the first hours of life; so optimising this period can have a dramatic effect on colostrum transfer.

Assisting the birthing process in a timely and appropriate fashion ensures that calves are not exhausted and therefore actively seeking colostrum early after birth. Also provide an appropriately clean and sheltered environment for cows calving to improve the vigour of calves in the first hours of life. A suitable environment also helps reduce transmission of any agents which cause disease.





GROW WELL

Grow Well

Grow Well aims to develop tools for veterinarians and their clients which may be used in practical situations.

Your veterinarian is the trusted professional with local knowledge to best meet your farm's needs. Combining science with practical considerations, your veterinarian can tailor a preventative health plan to fit your situation, aiding you in optimizing your farm's productivity through management of colostrum and calves. We trust the information contained within this leaflet will help you work with your vet to produce healthy calves on your farm.

REVIEW

Does your colostrum management plan consider:

- Cow health and body condition
- Pre-calving vaccines
- Ensuring a good start for the calf
- Monitoring the success of colostrum transfer

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