

Beware of Nursing Calf BRD

Limit the risk factors that set calves up for failure.

by Brent Meyer, DVM, MS

Photo by Bailey Toates



Generally, few of us expect problems with bovine respiratory disease (BRD) in calves nursing their dams on pasture. But, outbreaks of nursing calf BRD — sometimes called summer pneumonia — can and do occur.

These factors contribute to the risk of pre-weaning BRD in nursing beef calves:

1. Inadequate colostrum intake or failure of passive transfer of immunity
2. Mineral or vitamin deficiency
3. Internal parasites
4. Dam body condition score (BCS)
5. Fetal programming (dam nutrition and environment during gestation)
6. Unvaccinated calves
7. Weather
8. Cattle handling — e.g. gathering for artificial insemination of dams
9. Population density — e.g. crowded calving environments
10. Time spent under the same roof with dams

Factors 1-7 are related to the calf's ability to resist disease. Factors 8-10 can be mitigated with management. Any of these factors can be critical for a given calf on a given ranch. Consequently, all should be considered in preventing nursing calf BRD. Here are more details about three key factors.

Colostrum and passive transfer immunity

Failure of passive transfer (FPT) of antibodies from dam to calf via colostrum puts calves at a much higher risk of future harmful health events. For example, Dewell et al. reported that beef calves with FPT were 1.6 times as likely to become ill and 2.7 times as likely to die before weaning, compared to calves with adequate passive transfer.¹ Before you say, “This does not apply to my calves,” note that more than a third of calves had FPT in that same study.

Volume, timing and quality determine the amount of antibody gained via colostrum. Regarding volume, calves should consume “all the cow has,” up to four quarts. Regarding timing, efficient absorption of antibodies from colostrum begins to decline immediately after birth. It declines to 50% of baseline by six to 12 hours after birth and to near zero by 24 hours after birth. Regarding quality, 2-year-olds — or first-time calvers — produce lower-quality colostrum than mature cows.

Keep colostrum replacer on hand for use if you are uncertain a calf received adequate colostrum from its dam — it's too late to order it when you need it. Calves need approximately 150 to 200 grams

of immunoglobulin G antibody (IgG). Absorption of IgG from colostrum is somewhat better if the calf nurses from a nipple, but timing is critically important. If a calf will not nurse after patiently offering a bottle, do not hesitate to tube the calf to deliver the colostrum.

Internal parasitism and immune response

Internal parasite infections compromise the immune response to both disease and vaccination. Internal parasites “distract”

the immune system. When the “attention” of the immune system is diverted, the animal's ability to fight a BRD (or any disease) challenge is jeopardized. Overuse of pour-on parasiticide formulations, due to convenience, has led to parasite resistance to macrocyclic lactone dewormers in some herds. An oral “white” dewormer may be a better choice for calves. Decreasing the parasite burden in calves leads to

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a healthier immune system and increased weaning weights.

Vaccination and antibodies

Before discussing calf vaccination, we must consider the phenomenon of what is termed maternal antibody interference. Briefly, the maternal interference dogma states that during the first three months or so of a calf's life, antibodies from colostrum bind to and inactivate parenterally administered (subcutaneous or intramuscular) vaccines before they can stimulate an immune response. While the maternal interference dogma is

no longer believed to be true for all pathogens in all calves all of the time, it is still true for most pathogens most of the time — this is a good topic to discuss with your veterinarian. Therefore, we must bypass maternal antibody interference to effectively immunize young calves. Two methods to do so are vaccinating the dam or utilizing intranasal (IN) vaccination.

It is common to administer scour vaccines to dams prior to calving. This practice increases antibodies directed against scour pathogens in the colostrum, resulting in increased antibodies in calves. The same strategy can be employed against BRD pathogens.

Keep in mind there is a very low but not insignificant risk of pregnancy wastage any time a vaccine is administered to a pregnant cow. So, the risk of nursing calf BRD must be weighed against the risk of fetal loss. Modified-live viral (MLV) vaccines can only be administered to a pregnant cow if she received a dose of modified-live viral vaccine immediately prior to the start of the current gestation. Visit with your veterinarian before vaccinating pregnant animals.

Intranasal vaccines directed against infectious bovine rhinotracheitis (IBR), bovine respiratory syncytial virus (BRSV), parainfluenza-3 virus (PI³), *Mannheimia haemolytica* and *Pasteurella multocida* are available and can be safely administered to very young calves. A relatively new intranasal vaccine is available that contains all five of those antigens. Intranasal vaccination bypasses maternal antibody interference and is an effective way to prevent disease caused by these pathogens.

In order to reduce nursing calf BRD, limit the risk factors that set calves up for failure, such as FPT and internal parasites. Vaccination can increase the likelihood of success. Work with your veterinarian to identify and address pitfalls and to implement strategies that lead to healthier calves. **HW**

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¹ Dewell RD, Hungerford LL, et al. Association of neonatal serum immunoglobulin G1 concentration with health and performance in beef calves. JAVMA 2006; 228 (6) 914-921.