Cattle Vaccine Refresher

By Dr. Mira Kelada
May 31, 2017

Vaccines are an important part of a herd health strategy. The economic ramifications of having disease within the herd, especially preventable disease, is staggering. Having a persistently infected BVD calf within the herd can cost $15-$25 per year, per cow exposed to a bull[1]. When vaccination for BVD (in addition to IBR, BRSV, etc.) costs less than $3 a head, vaccination makes good economic and herd health sense. However, vaccination protocols can be confusing and the reasoning behind the protocols and vaccine handling are not intuitive. What follows is a short discussion about vaccines in cattle, the difference between MLV and killed vaccines, handling, and timing of vaccine administration.

There are two major categories of vaccines that are used by cattle producers. These are inactivated/killed vaccines and modified live vaccines. This refers to the condition of the bacteria or virus that is included in the vaccine. A killed vaccine means that the organism is not alive and modified live means that the organism is still alive but has been altered in a way so as not to produce disease when administered to an animals.

The advantage of using a modified live vaccine is that they typically offer quicker and better protection against viral diseases when compared to the killed vaccines. Typically, there are more serum antibodies stimulated after vaccination with a modified live vaccine when compared to a killed vaccine (the body 'remembers' the pathogen more when a MLV is used). Some people will say that using an MLV over a killed vaccine means that a protective response will be triggered in an animal with only one dose (and that no booster is needed). However, any animal that has not been vaccinated before ideally would have a booster of either a killed or a MLV 3-4 weeks later. Once cattle have been boostered and exposed to the vaccine once, they can go to an annual vaccination schedule.

The major disadvantage of the MLV vaccine is that some are not labeled for use in pregnant cows or calves nursing pregnant cows. When MLV vaccines are approved for use in pregnant cows, they typically require that the cow has been vaccinated with an MLV from the same company in the past 12 months. Additionally, it is important to remember that MLV should not be given within 30 days of the start of the breeding season to any naïve heifers who have never been given an MLV before. The IBR (infectious bovine rhinotracheitis) component of MLVs has been linked with causing inflammation of the ovary, which could reduce fertility for a short period of time in heifers that have never been vaccinated previously. Giving the vaccine more than 30 days before the start of the breeding season ensures enough time for any ovarian inflammation to subside and fertility to return to normal.

Timing of vaccination is important to get a good immune response. Giving vaccines during stressful periods can reduce the ability of the animal's immune system to respond the vaccine. This can result in reduced protection. Administering respiratory disease vaccines 2-4 weeks prior to weaning and again at weaning is preferred. Cattle that have poor nutrition, parasites or have other diseases are likely

[1] Grooms et. al, 2009 The Bovine Practitioner Volume 43, No. 2 (from BCRC webinar with Dr. Larson and Dr. Erickson)

to poorly respond to vaccines and not mount an appropriate immune response. Nervous and stressed cattle may not respond well to vaccines. The more times that cattle are run through a chute, the more calm they are and the more likely they are to respond appropriately to a vaccine. Ultimately, it is important to discuss vaccine protocols with your veterinarian in order to get the best program that works for your herd.

It is also important that vaccines are handled appropriately if they are to remain efficacious. Please follow handling instructions that are on the vaccine label. Some important things to remember include not mixing up MLV vaccine too long in advance prior to giving it to cattle. Upon mixing, MLV should be used within one hour. Beyond this, the potency of MLVs decrease tremendously. Do not leave vaccines out in the sun for too long as this will further diminish the efficacy of the vaccine (left out in the sun, the vaccine may only be good for 45 minutes from the time of mixing). Storage of vaccines is also critically important. When storing vaccines in a fridge, avoid placing them in the door. Temperature is less regulated there, and this can affect the vaccine negatively. Additionally, try to keep the vaccines on the middle shelves of the fridge as temperature tends to be more stable there. In terms of syringe maintenance, do not clean the syringe with soap or disinfectant. Only use warm clean water to clean the syringe. Make sure that the dose on the syringe is correct and check this prior to vaccinating animals. When vaccinating, please change a needle prior to a syringe being filled. Ideally, one would change a needle every 10 animals.

If you have any vaccine questions, please discuss this with your veterinarian. Vaccines are a great tool for producers to reduce disease burden in their herds, but it is important that they be used appropriately in order to be effective. Good disease control is achieved with good vaccine selection, handling, timing and administration!