Vaccination for Your Herd

Lew Strickland DVM
Extension Veterinarian
University of Tennessee

Now that all of your calves should be on the ground from spring calving; it's time to consider vaccinations. A successful herd health program includes, but is not limited to, proper herd immunization to prevent and/or control a variety of infectious diseases. However, selecting the proper vaccines for your herd can be a difficult task considering the large number of vaccines that are available. Therefore, some things to consider when developing a vaccination program for your herd are:

1. Determine the goals of your vaccination program (e.g., what diseases do you want to prevent and/or control, and in what type/age animal?). Different herds will have different goals, and therefore different vaccination protocols.
2. Discuss these goals with your herd health veterinarian and/or Extension agent.
3. Understand a vaccine's expected level of protection.
4. Understand a vaccine's duration of immunity.
5. Never underestimate the importance of stress management and nutrition with respect to an animal's ability to properly respond to a vaccination.

The following information describes some of the important factors in determining what vaccines are most appropriate for a particular operation. Please use this information as a general guideline in developing an effective vaccination program.

Vaccines are generally categorized as killed vaccines (KV), toxoids, modified live vaccines (MLV), or chemically altered vaccines. Each category has its advantages and disadvantages.

Killed Vaccines (KV) and Toxoids	
Advantages: ● Available for many diseases ● No risk of the vaccine organism spreading between animals ● Minimal risk of causing abortion ● No on-farm mixing required	Disadvantages: ● More likely to cause allergic reactions and post-vaccination lumps ● Two initial doses required ● Slower onset of immunity ● Immunity is usually not as strong or long-lasting when compared to MLV products ● Usually more expensive than MLV products

Modified Live Vaccines (MLV)	
Advantages: ● One initial dose may be sufficient, but boosters are sometimes required ● Stimulate more rapid, stronger, and longer-lasting immunity than KV products ● Less likely to cause allergic reactions and post-vaccination lumps ● Usually less expensive than KV products	Disadvantages: ● Risk of causing abortion or transient infertility, therefore they should generally be administered 6-8 weeks prior to the breeding season ● Must be mixed on-farm and used within about 1 hour

Chemically Altered Vaccines	
Advantages: ● Share many of the advantages of MLV products ● Safety is similar to KV products ● Minimal risk of causing abortion	Disadvantages: ● Two initial doses required ● Slower onset of immunity than MLV products ● Immunity is usually not as strong or long-lasting when compared to MLV products ● Usually more expensive than MLV products

Vaccines are available for many diseases. However, not all diseases are a routine threat to many beef herds, and some vaccines are not sufficiently effective to justify their use. Therefore, every cattle operation will have unique vaccination requirements based on individual herd goals. The following guidelines for vaccinating cattle may not be applicable in all situations. The best use of these guidelines is as a starting point to develop an effective vaccination protocol with your herd health veterinarian and/or Extension agent. When appropriate, ensure products are safe for pregnant animals and for calves nursing pregnant cows. **Properly store and administer vaccines according to label directions, adhere to designated meat withdrawal times, and follow all other Beef Quality Assurance (BQA) guidelines.**

Nursing calves

- 7-way clostridial (blackleg)
- IBR/BVD/PI_3/BRSV
    - IBR = infectious bovine rhinotracheitis
    - BVD = bovine viral diarrhea
    - PI_3 = parainfluenza$_3$
    - BRSV = bovine respiratory syncytial virus
- Calf-hood vaccination for brucellosis if recommended by herd veterinarian
- Consider a leptospirosis 5-way vaccine for future replacement heifers and bulls.

Preconditioned feeder calves and stocker calves

- IBR/BVD/PI_3/BRSV
- 7-way clostridial (blackleg)
- *Mannheimia haemolytica*
- *Pasteurella multocida*

Breeding animals (replacement heifers, cows, and bulls should generally be vaccinated six to eight weeks prior to the breeding season so immunity is high during the breeding season)

- IBR/BVD/PI_3/BRSV
- Leptospirosis 5-way
- Vibriosis (*Campylobacter fetus*)

Cow/Calf Vaccination Program

Get vaccines and boosters into the calves as soon as possible. The sooner the vaccines are given to calves the quicker they will have protection against infection. Ideally, initial vaccines should be given between 2-4 months of age with boosters given before weaning. This has been the recommendation for several decades, but data from recent research suggests that calves can be vaccinated as early as 6 months and have positive results. The next best alternative is to give the initial vaccines 2-3 weeks before weaning with boosters given at or 1-2 weeks after weaning. The final and least desirable option is to give the initial vaccines at weaning with boosters 2-4 weeks later. The entire goal of a calf vaccination program is to build a high level of immunity prior to weaning in order to decrease the risk of your calves getting sick during this stressful time. The adult cattle in your herd can then be vaccinated on an annual basis once a base program has been built.

A successful vaccination program is not a one step process. Timing of vaccination, health/stress level of the animals, and handling of the vaccine itself all comes into play. Make sure to read vaccine labels for dose, route of administration, timing of boosters, and storage. Many times the efficacy of a vaccine all depends on how we handle and administer the product. Also, a vaccine program is not a cookie cutter process, so work with your local veterinarian to design a protocol for your unique operation. If you have any questions feel free to contact me at: 865-974-3538, or lstrick5@utk.edu.