Vaccinating the Herd

Lew Strickland, DVM, Extension Veterinarian, Animal Science Department

University of Tennessee

A successful herd health program includes, but is not limited to, proper herd immunization (vaccination) 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

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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*)

Understanding Protection Claims on Vaccine Labels

The Center for Veterinary Biologics (CVB), which is part of the Animal and Plant Health Inspection Service (APHIS) of the USDA, is the agency that grants the appropriate protection claims for vaccines based on a thorough analysis of supporting efficacy and safety data. Protection claims are available on all vaccine labels or product inserts. Understanding label claims is therefore one way to evaluate the expected efficacy of a vaccine, but remember that these claims only apply when products are administered according to label directions. The USDA can grant one of five possible levels of protection statements:

1. Prevention of infection — Highest level of protection
2. Prevention of disease
3. Aid in disease prevention
4. Aid in disease control
5. Other claims — Lowest level of protection

What do these label claims mean?

1. Prevention of infection – prevents all colonization or replication of the challenge organism. A label statement such as "for the prevention of infection with [specific microorganism]" may be used. This claim is rarely granted.

2. Prevention of disease – highly effective in preventing clinical disease. A label statement such as "for the prevention of disease due to [specific microorganism]" may be used.

3. Aid in disease prevention – aids in preventing disease by a clinically significant amount. A label statement such as "as an aid in the prevention of disease due to [specific microorganism]" may be used.

4. Aid in disease control – aids in the reduction of disease severity, duration or onset. A label statement such as "as an aid in the control of disease due to [specific microorganism]" or a similar one stating the product's particular action may be used.

5. Other claims - products with beneficial effects other than direct disease control. Products with beneficial effects other than direct disease control, such as the control of infectiousness through the reduction of pathogen shedding, may make such claims if the size of the effect is clinically significant and well supported by appropriate data.

These Protection Statements are outlined by the USDA, APHIS, Veterinary Services Memorandum No. 800.202, June 14, 2002.