



# Oklahoma Quality Beef Network VAC-45 Program Requirements

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## EXTENSION

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### Introduction

The Oklahoma Quality Beef Network (OQBN) is a joint program between the Oklahoma Cattlemen's Association and the Oklahoma State University Cooperative Extension Service. It is composed of academia, industry professionals, veterinarians, livestock marketers and cow/calf producers. The program provides health management certification and value-added marketing opportunities to cow/calf producers in Oklahoma and neighboring states.

The value of the OQBN program relies on producer requirements for best management practices based on scientific research to improve animal health and welfare. Here we outline the program and the importance associated with each of the requirements.

Preconditioning programs require a fair amount of management and planning to turn the added pounds into added dollars. Considerations should be made for vaccine purchase, timing, labor and facility coordination, target weight calculation and the amount of feed needed to meet those targets.

### Program Requirements

- Vaccinated with two rounds of a 5-way respiratory vaccine for BVD Type 1 & 2, IBR, PI3, and BRSV
- Vaccinated with two rounds of at least a 7-way clostridial vaccine (a.k.a. Blackleg)
- Vaccinated with one dose of *M. haemolytica* (a.k.a. shipping fever) vaccine
- Weaned a minimum of 45 days
- Males castrated and healed
- Dehorned and healed
- Bunk trained
- Producer Beef Quality Assurance (BQA) certification
- Raised at the ranch of origin
- OQBN program ear tag identified
- Program requirements must be third party verified by Oklahoma State University Extension personnel

### Vaccinations

Vaccinations are considered the most important piece of disease prevention and a successful preconditioning plan. Vaccines are an expensive investment and they should be treated as such. Proper handling and administration of vaccines should follow BQA standards to decrease the likelihood of infection upon exposure to a pathogen and to minimize tissue damage to consumable protein products. Veterinarian consultation is recommended when starting a preconditioning health protocol to determine the right product and strategy to fit the operation.

*Timing of Vaccine Administration:* The OQBN program provides producers with 3 options utilizing different timing strategies to build an immune response for both respiratory and clostridial vaccines.

- **Branding and Weaning:** Branding is defined as 2-4 months of age at which point the calf would receive the initial vaccine followed up with revaccination at or near weaning. OQBN recommends the use of a modified live viral (MLV) vaccine. Use of killed vaccines (KV) is accepted but not preferred. Using killed vaccine from birth up to 6 months of age may provide a less effective antibody response due to interference from colostral antibodies passed from dam to calf. MLV vaccines should be used with extreme caution in a herd containing pregnant cows that have not been previously vaccinated or cows with unknown health history due to the risk of abortion.
- **Prewaning and Weaning:** Prewaning is defined as 2 to 5 weeks prior to weaning. The first administration of vaccine is given 2 to 5 weeks preweaning followed by the second vaccine administration at weaning. The use of a KV is permitted during the 2-to-5-week period only. The second vaccine administration is required by OQBN to be a MLV vaccine.
- **Weaning and Postweaning:** In this option, the first administration of vaccine is given at weaning and followed with the second vaccine administration within 14 to 28 days. OQBN requires the vaccines used in this option be a MLV only.

The effectiveness of a vaccine relies heavily on when vaccines are given. There are many factors to consider that could positively or negatively impact the outcome such as calf age, stress and time between the first and second dose of the vaccine. For example, colostral antibodies received from the dam at first milk provide calves with defense mechanisms until the immune system has fully developed. Vaccines, if given in the presence of these colostral antibodies, may be perceived as a “foreign” object by the circulating colostral antibodies and neutralize the vaccine antigen (Endsley, Roth, Ridpath, & Neill, 2003), this is possible with both MLV and KV vaccines, but is most commonly associated with KV. The potential result is a failure of the calf’s immune system to respond to the initial vaccination.

For vaccines to work most effectively, the calf should be healthy and unstressed. Stress is considered the number one precursor to disease in livestock animals, and weaning is one the most stressful events in the calf’s life. Research has shown that administering vaccines during periods of high stress can be counterproductive to the animal when compared to vaccines given to animals not under stress. Utilizing a preweaning or a delayed (a week or two after weaning) vaccination protocol may increase efficacy and provide greater protection to the animal.

The time period between the first and second dose of vaccines should also be considered. Manufacturer requirements on many commercial vaccines indicate that vaccine doses be given 14 to 21 days apart for the greatest disease protection. Consult your veterinarian to determine best practices for your operation.

**Vaccine product:** The OQBN program allows the use of KV and MLV vaccines with certain timing strategies for administration. Producers may request alternative plans for review by OQBN administrators only with significant cause and justification.

**Option 1 Branding and Weaning:** requires the use of two rounds of 5-way respiratory vaccine (BVDV types I & II, IBR, PI3, and BRSV). The first round may be either a MLV or KV\*, with the second dose at weaning being an MLV. Requires the use of two rounds of at least a 7-way clostridial (blackleg) vaccine, and one dose of *M. haemolytica* (a.k.a. shipping fever) vaccine given at weaning (\*Killed Vaccine not preferred).

**Option 2 Preweaning and Weaning:** requires the use of two rounds of 5-way respiratory vaccine. The first dose at preweaning may be MLV or KV, with the second dose at weaning being a MLV (required). Requires two rounds of at least a 7-way clostridial vaccine, and one dose of *M. haemolytica* vaccine given at weaning.

**Option 3 Weaning and Postweaning:** Requires the use of two rounds of 5-way MLV respiratory vaccine, requires the use of two rounds of at least a 7-way clostridial vaccine, and one dose of *M. haemolytica* given at either weaning or postweaning.

A list of approved vaccines can be found at: Vac-45 Information | Oklahoma State University (okstate.edu)

## Preconditioning period

OQBN requires a minimum of 45 days weaned before sale, but 60 days is suggested.

A 45-day preconditioning timeframe has become industry standard in many value-added programs. Stressors associated with weaning can be physiologically taxing on a calf contributing to weight loss, morbidity and ineffective response to vaccinations. Combine that with transportation and comingling stressors and you have the combination for significant potential health consequences. Therefore, preconditioning programs have been designed to minimize the negative effects by allowing the calf time to adjust to dam separation, diet changes and build immunity. Research has indicated that the most successful preconditioning programs include a 45 day period at minimum that add valuable pounds and result in fewer health related costs during the receiving period (Step et al., 2008) and higher feedlot performance when compared with non-weaned or short-weaned (<15 days) calves (Bolte et al., 2009). Longer weaning periods also contribute to less shrink and higher weight on sale day when compared with non-weaned or short weaned calves (Barnes, Smith & Lalman, 2007).

## Castration

OQBN requires all bull calves be castrated and healed from procedure prior to sale.

Castrating bull calves has become common practice in U.S. beef herds. In 2017, the USDA-APHIS NAHMS Beef Cow Calf study indicated that 62% of commercial cow-calf herds use castration methods in their management practices. Castration has provided economic benefits to both the cow-calf producer and feedlot operators through increased market prices and meat quality. Castration also decreases unwanted pregnancy and increased safety of workers and other animals.

There is a perceived notion that intact bulls have an advantage in body weight gains during the preweaning period and post greater weaning weights than calves castrated at birth. However, numerous studies have shown the weaning weights are similar for bulls and steers (Bailey, Probert, & Bohman, 1966; Glimp, Dikeman, Tuma, Gregory, & Cundiff, 1971; Looper et al., 2005). Advantages in calf weight due to testosterone are presumably realized at a time following average weaning dates closer to puberty (Kawate et al., 2011).

Studies examining how timing of castration effects average daily gains (ADG) in cattle castrated either in early life (birth to 2 mo.) or those castrated at weaning or postweaning (6-10 mo.) demonstrated higher ADG during the post-weaning period in the early castrated calves (approx. 0.30 lbs/day greater) than those castrated later in life (Brown et al., 2015; Micol et al., 2009). Stress can also play a role in weight gain in young calves. Research has shown that calves castrated at 5 ½ months experienced a greater duration of stress than those castrated at birth or at branding (Stafford & Mellor, 2005b).

Bull calves entering the stocker or feedlot segments of the industry have numerous health and performance factors associated with late life castration such as increased risk of morbidity and mortality, sick treatments and decreased ADG.

Therefore, price discounts for bull calves being sold at market can be substantial when compared to steers marketed in the same weight class. Discounts can average \$6-12/cwt or \$30-60 per head (Troxel & Gadberry, 2013; Williams, Raper, DeVuyst, Peel & McKinney, 2012). Producers should consult with their veterinarian to develop a castration protocol.

### **Dehorning**

OQBN requires all cattle (if applicable) be dehorned and healed prior to sale.

Dehorning or disbudding calves is primarily used as a safety mechanism to protect workers and other animals from injury. Significant discounts have also been realized by producers for selling horned cattle due to added labor to remove the horns and safety concerns. As with most management practices associated with pain, pain and stress to the animal can be reduced by performing such procedures early in life. Cautery disbudding has been demonstrated to inflict the least amount of pain and stress with horn amputation being the greatest. Local anesthetics and non-steroidal inflammatory drugs can greatly reduce the associated pain and stress (Stafford & Mellor, 2005a).

Horned cattle have been identified to have greater social interaction and more aggressive behavior towards each other. Research has linked the more aggressive behavior of horned cattle to nearly twice as much damaged tissue that was trimmed during processing (Knierim, Irgang, & Roth, 2015).

Producers selling horned cattle are likely to see significant discounts when compared to dehorned or polled cattle. Recent reports indicate those discounts range from \$3-7.25/cwt or \$15-36.25/head (Troxel & Gadberry, 2013). Producers should consult with their veterinarian to develop a dehorning protocol.

### **Bunk Training**

Calves trained to eat from a bunk experience less shrink in the feedlot as they are familiar with where to find feed and higher concentrate diets. Calves able to make a smooth transition to backgrounding/feedlot feeding are able to maintain nutrition status aiding in the animals' overall health.

### **BQA Certification**

All producers are required to complete Beef Quality Assurance (BQA) training prior to verification. BQA training is a program developed by the National Cattleman's Beef Association (NCBA) to promote animal welfare and safe handling, use, and administration of vaccines and drugs in our food animals to increase product quality. For more information on BQA training, please visit [www.bqa.org](http://www.bqa.org) or contact your county extension office.

### **Ranch Raised**

All calves must be raised on the ranch of origin to be eligible for enrollment. No comingled groups will be allowed.

### **OQBN Program Ear Tag**

All calves must be identified with an OQBN program ear tag. Tags should be in ear prior to verification of calves. Ear tags can be purchased by visiting the OQBN webpage at: [www.oqbn.okstate.edu](http://www.oqbn.okstate.edu).

### **Third Party Verification**

All calves enrolled in the OQBN program will be third party verified by an OQBN representative. OQBN representative will conduct an on-ranch visual observation of calves and health records to determine if all requirements have been met. Calves should be healed from any procedures, free of any ailments or sickness and identifiable with program ear tag at the time of verification.

### **Recommendation**

#### **Deworming**

OQBN does not require that cattle be dewormed. Deworming is an optional treatment that is recommended.

The most apparent benefit to deworming calves is the added weight during preconditioning. There are a multitude of health-related issues associated with parasitic infections which can decrease immune function. Calves grazing on pasture are more susceptible to intestinal parasitic infection than calves backgrounded in a drylot. Parasitic challenges can also suppress the calf's ability to effectively respond to vaccines and subsequently increase susceptibility to other diseases (Gibbs, 1987).

While most parasitic infections go unnoticed from a health perspective, the adverse effects can be seen economically by disrupting digestion and protein absorption, thus reducing weigh gain and feed efficiency (Hawkins, 1993). For optimal growth, it is recommended that calves be dewormed prior to weaning (Reinemeyer, 1997). Deworming at weaning reduces the parasitic challenge providing more efficient use of energy by the calf. At a conservative market price of \$1.50/lb. for a 550 lb. steer, and the average cost of an injectable dewormer at \$0.74/dose (dose = 1ml for every 110 lbs.), an additional 2.5 lbs. of gain would be needed to recoup the cost for the treatment.

Depending on geographical location, deworming calves may or may not be necessary. Producers should consult with their veterinarian to develop a deworming protocol.

### **Conclusion**

The OQBN program requirements were developed to promote the responsible production of higher quality cattle in Oklahoma with requirements based on scientific evidence while providing producers with access to information/education and value-added marketing opportunities. The requirements of the OQBN program have proven to benefit both sellers and buyers in different segments of the beef cattle industry by producing healthier, heavier calves.

## Resources

Oklahoma Quality Beef Network:  
<https://www.oqbn.okstate.edu>

Oklahoma Quality Beef Assurance:  
<https://www.oklabeef.org/bqa>

Oklahoma State University Beef Extension:  
<https://www.beef.okstate.edu>

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