

PICKING THE RIGHT TOOL

Vaccination programs are effective when used correctly.

by Jessica Wesson, editorial intern

When a rancher needs a tool for a fix, they typically don't have time to dig around a cluttered, messy toolbox to find the right one. Sometimes they end up grabbing a tool that wasn't necessarily designed for the job, which can lead to even more problems.

Vaccinations are akin to tools in a rancher's toolbox, said A.J. Tarpoff, assistant professor and extension beef veterinarian at Kansas State University. He offered tips for how to organize the vaccine toolbox during an Angus University webinar earlier this year.

"We have to ask what the vaccine is intended to do," Tarpoff said. "It's meant to stimulate the immune system of a healthy animal. We must also understand that a vaccine could always be overwhelmed."

Vaccines aren't 100% effective all the time. Tarpoff said they can be overwhelmed when compounding stressors are involved or when the number of pathogens are high enough.

"Why do we vaccinate?" Tarpoff asked.

To protect reproductive performance of the cows, he responded, and keep the calves safeguarded against common diseases, some of which can be fatal. Vaccinating cows and calves is essentially protecting the income of a cattle operation by avoiding large outbreaks.

Keeping the tools sharp

Tools need to be cared for, or they could rust or be damaged. The same goes for vaccines. Proper storage and handling ensures they're as effective as possible, said Tarpoff.

Maintaining the on-label temperature should be a high priority, he said. This typically

ranges from 35°-45° Fahrenheit (F).

"Whether you buy it from a store, from the veterinarian or have it drop-shipped to your home, maintaining the temperature all the way through is critical," Tarpoff said. "If they get too warm

or too cold, it could hinder the vaccine's effectiveness."

Don't trust your herd's health to just any refrigerator, he said.

University of Nevada researchers monitored refrigerators from 20 ranches and four feed stores. They found 25% of them failed to successfully maintain the range of temperatures necessary to store vaccines, Tarpoff said. A University of Arkansas study tested 180 refrigerators, and 76% were unacceptable for storing animal health products.

Tarpoff suggested purchasing a refrigerator thermometer to monitor the temperature over time.

Consider type

"There are a lot of vaccines out there, and there is a time and place for each one of them," Tarpoff said. The three vaccine types are modified live virus (MLV), chemically altered and killed.

MLV vaccines are strong, fast and offer longer protection, he said. These replicate inside of the animals and mimic infection, and they must be handled carefully.

While chemically altered vaccines offer the same response as MLV vaccines, they do not last



as long, Tarpoff said. They do not have a systematic replication, they are temperature-sensitive and more expensive than modified-live vaccines.

Killed vaccines are stable in storage and handling, but require multiple doses and carry a risk of anaphylaxis.

Choosing your tool

The next step is to decide which products to use, Tarpoff said.

“Every operation is different, so having a relationship with your local veterinarian is important,” he said. “They understand your operation’s goals, animals, the area you are located in and the risks associated with vaccines.”

Veterinarians can offer guidance through the process of choosing a vaccine and deciding how to use them. Tarpoff said protocols are flexible and may change over time,

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but they should be made for a reason, such as:

- ▶ changes in disease potential,
- ▶ changes in owner risk, and
- ▶ changes in purchasing.

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General guidelines

To get a successful response, the animal needs to have a functional immune system. A vaccine challenges the animal’s immune system, so it must be healthy to mount a proper response, Tarpoff explained. This builds up the immune system against a real attack.

Prebreeding is one of the most important times to vaccinate cows, Tarpoff said. Many pathogens can cause the cow to abort her calf, and prebreeding vaccinations protect against diseases that can affect both the cow and her unborn calf. This will prepare the cow’s immune system before she is put under the strain of pregnancy.

Preg-check is another convenient time to vaccinate, Tarpoff said. All the cattle will be gathered, providing an opportunity to administer booster shots. Vaccinating cows at this time will allow those antibodies to be passed on to their next calf through the colostrum.

What about nursing calves? Tarpoff suggested the best time to start vaccinating calves is between 2 and 4 months of age, when the passive immunity a calf received from its mother’s colostrum starts to dissipate and the calf’s immune system starts to take over and mature. That’s when vaccines

should be given to stimulate that immunity.

Another important time to vaccinate is about 30-45 days before you plan to separate the calf from its mother, he said. This will strengthen the immune system before weaning.

Diseases to vaccinate against

Vaccines protect against a host of diseases. The first to consider, Tarpoff said, are the clostridial diseases, such as enterotoxemia, blackleg, botulism and tetanus. Caused by bacteria that can live in the soil, clostridial diseases are constantly a threat since they are present in the everyday environment.

The vaccines for these are typically the cheapest and most efficacious, he said, noting to include a tetanus shot if calves will be castrated. Sometimes tetanus is part of a combination clostridial vaccine, but not always, so ask your veterinarian.

Also a concern are the viral diseases a calf can pick up. The five-way shot is preventative against diseases like infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), parainfluenza-3 (PI₃) and bovine respiratory syncytial virus (BRSV).

Another vaccine category includes respiratory bacterins: mannheimia, pasteurella and histophilus. Vaccines against these viruses and bacteria are usually administered preweaning or at weaning time.

Why boost?

Over time animals have something called an anamnestic response. The first dose given at branding acts as a primer for the calf’s body. The dose administered preweaning gets a larger reaction.

The antibody response is higher, and it creates a longer defense time.

Each animal is different and will react differently to vaccines, Tarpoff said. Some cattle will have a poor response and will not be protected, while animals on the other end of the spectrum will have ongoing protection.

Most cattle will fall in the middle, responding adequately to receive protection, he said. This is the goal, as animals will develop memory for the antibodies able to fight the infection if they ever encounter a particular disease.

Reducing stress during weaning

Weaning is one of the most stressful times in a calf’s life, and that can tax their immune system, Tarpoff said. This will decrease the effectiveness of the vaccines administered at that time.

Avoiding castration at weaning can remove one stress.

“The longer the testicles are attached to the calf, the longer he is attached to them,” Tarpoff said. “What that means is we need to castrate within the first few days of life. If you catch them to tag them, that would be a prime time to castrate.”

To reduce stress, 2 to 4 months of age is the latest Tarpoff recommends castration.

“There are plenty of simple methods to decreasing the stress that weaning causes,” he said. “We can implement soft weaning with things like fenceline weaning or two-stage weaning. Ranchers can also acclimate the calves to the area that they will wean them into.”

One way to help calves stay calmer during weaning is conditioning them to the area by bringing them in with their mothers prior to the separation period, he added. Ranchers can use that time to let calves learn how to eat and drink on their own in the new environment.

A good vaccination program means nothing without good management to back it up. Tarpoff emphasized the importance of

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clean water and how that can greatly affect an animal's chances of getting sick, especially during stressful times.

Weather affects herd health, too, Tarpoff said. Mother Nature is uncontrollable, but producers can plan ahead for blizzards, excessive rain that creates mud, heat, drought and other weather situations.

Recordkeeping

A successful vaccination program involves detailed and consistent recordkeeping of both vaccinations and treatments, Tarpoff said. Producers should pay attention to things like antibiotic residue avoidance and morbidity rates.

"It's hard to go back and think about which animal got sick or how many got sick," Tarpoff said. "You might want to know who got what treatment and how much."

To get started, Tarpoff recommended visiting www.bqa.org for example vaccination record sheets.

Recordkeeping also allows for participation in marketing verification. Producers who adhere to a strict preconditioning program might be eligible for premiums through third-party verification programs.

For ranchers considering preconditioning programs, there are a few things to assess:

- ▶ facilities,
- ▶ time,
- ▶ labor,
- ▶ understanding of the costs/benefits, and
- ▶ specific marketing opportunities.

All the tools in a toolbox are useful when selected correctly. Vaccines are much the same. With the right information and consideration, producers can prevent widespread disease. |

Editor's note: Jessica Wesson is the *Angus Beef Bulletin* summer intern. You can access this webinar at <https://www.angus.org/university/webinars>.

Educational resources offered online

The American Angus Association offers a suite of educational webinars through its Angus University platform online at <https://www.angus.org/university/webinars>.

Visit the website to find access to versions of past webinars, including:

- ▶ "Focusing on Fertility"
- ▶ "Tackling Timed AI"
- ▶ "Rev Up Replacements"
- ▶ "Evolution of the Cow; Evolution of Nutrition"
- ▶ "Facts about Foot Scoring"
- ▶ "Diving Into the Data"
- ▶ "Capitalizing on Calf Health"
- ▶ "Revolutionary Marketing"

Other topics focused on producing registered Angus seedstock are also available.

The archived versions of the webinars are approximately an hour in length and feature Association staff and Extension personnel.

