

Preparation for Animal Health

Brush up on proper herd health strategies.

by Kindra Gordon

How can you get the most from your annual herd vaccination program? How can you prime calves' immunity to prepare them to perform once in the feedlot? Test your herd health knowledge with these quick questions and answers.

What's the difference between modified-live and killed vaccines?

Just as the name implies, a modified-live virus (MLV) vaccine contains the live virus, but its virulence has been reduced to a level that shouldn't cause disease. A killed vaccine is considered safer and more stable because it is not living.

While MLV and killed vaccines can both be effective against the viral respiratory pathogens, North Dakota State University Extension veterinarian Charlie Stoltenow says most research indicates MLV vaccine produces a stronger immune response.

He points out that some producers are concerned about causing abortions in the cows if the nursing calves are vaccinated with an MLV vaccine, but Stoltenow says that risk is minute if the cows were previously vaccinated with an MLV vaccine when they were open before breeding season.

Why is it important that calves receive two doses of vaccine?

Stoltenow says a single dose is usually not enough to produce adequate immunity. Thus, he says, giving a second dose is an

"insurance policy." He emphasizes that two doses are especially important when administering killed vaccines because, as mentioned, they do not produce as strong of an immune response as MLV vaccines.

Which vaccinations are important for calves?

Stoltenow advocates that calves be vaccinated against what he calls the big four: infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), bovine respiratory syncytial virus (BRSV) and parainfluenza-3 virus (PI₃).

"These set it up so calves can better fend off other disease threats," he says. Additionally, he says producers should consider vaccinating against clostridial diseases and manheimia.

Which annual vaccinations do you recommend for the cow herd?

Here, Stoltenow says IBR and BVD are important. He points out that because BVD can be passed through fence-line contact, it is also important to know if your neighbors have a BVD control program.

Regarding other cow vaccinations, Stoltenow suggests producers visit with their state diagnostic lab and their local veterinarian to identify which diseases are of concern in their local areas. For example, he

says if no cases of leptospirosis (lepto) have been reported, it may not be necessary to vaccinate annually for the disease. Since anthrax has become more prevalent in the Dakotas in the last few years, it may be an annual vaccine to consider.

Stoltenow recommends working with your local veterinarian to devise a herd-health strategy that works best for your herd.

What else is needed for an animal health program to be effective?

Stoltenow says nutrition is key.

"All of my health programs start with nutrition," he says. "We can't look at vaccines as a panacea that's going to protect us. If an animal doesn't have an immune system, the vaccine can't work miracles."

Pfizer Animal Health's Gordon Brumbaugh is also a believer in nutrition. "Nutrition is extremely important to minimize sick calves," he notes. As an example, when calves are weaned, a good, palatable starter ration is critical.

Additionally, Brumbaugh, who was on the faculty at Texas A&M University and is now a technical veterinarian with Pfizer, says parasite control is equally important.

"Don't overlook the interaction of parasites with the immune system," he says. "If you have a parasitized animal, you cannot expect them to respond well to vaccination."

BQA basics

Keep Beef Quality Assurance (BQA) guidelines in mind when working cattle. If you have new employees, make sure they are familiar with these basics as well:

- ▶ Do not inject products into the rump or leg.
- ▶ Inject all products in an approved region of the neck, or in the ear, if specified.
- ▶ Use subcutaneous (sub-Q) route of administration, unless intramuscular (IM) route is specified.
- ▶ Select a clean area, or clean the area prior to injection.
- ▶ Use the proper needle diameter. For water-based products, use an 18- or 16-gauge (ga.) needle. Make sure you have adequate restraint to prevent needle breakage. For thicker products, use a 16-ga. needle.
- ▶ Use needles 1/2 to 3/4 inch (in.) long for sub-Q injections.
- ▶ Use needles 1 in. to 1 1/2 in. long for IM injections in larger cattle. Change needles often to prevent the needles from becoming contaminated with dirt or feces and to prevent them from becoming dull. Changing needles every 10-15 head is recommended.
- ▶ Follow label instructions or a veterinarian's recommendations for proper product dosage.
- ▶ Follow label instructions regarding maximum volume per injection site. IM products should be limited to 10 cc per injection site. Sub-Q injections can be of larger dosage, as they are not injected into the muscle.
- ▶ Space injection sites at least 4 in. apart. This is a normal hand's width.
- ▶ Be sure to observe withdrawal times.
- ▶ Follow proper recordkeeping protocol. Records will document individual or group treatment and should include route of administration, product used, product lot number and serial number.

What are tips on proper handling of vaccines for maintenance of their efficacy?

The rules are simple, but are often not followed:

- ▶ Expiration dates should be checked before use.
- ▶ The vaccine should never be allowed to reach room temperature before use.
- ▶ MLV vaccines especially must be kept out of direct sunlight. Ultraviolet rays will kill a large number of viruses in an MLV vaccine, which can compromise the efficacy of the vaccine.

Why do vaccines sometimes fail?

Stoltenow says there can be several reasons. Perhaps the animal is already incubating the disease, or there may have been passive-transfer interference.

Human error can also be blamed. Sometimes the wrong vaccine is given for the condition; the vaccine experienced temperature abuse or was outdated; or it was administered incorrectly. For instance, if the shot is given at the top of the neck, it can't get into the blood supply.

But, Stoltenow says, the most common reason is that the animal does not have the ability to mount an appropriate immune response. He says this can be influenced by factors such as stress or poor nutrition.

What causes shipping fever?

When calves leave the ranch and head to the feedlot, we often hear the term "shipping fever." Brumbaugh attributes this stress-induced sickness to cattle being marketed at fewer locations, resulting in more commingling, and cattle being transported farther distances. He also says today's cattle are often marketed at a younger age, resulting in a less mature immune system.

What are tips in treating sick calves?

Stoltenow says the best strategy is to catch sick animals early and treat them immediately. He suggests this rule of thumb: The first sign of disease is appetite depression. If calves are at the runny nose stage, it's nearly too late.

For high-risk calves — those that have been commingled or maybe haven't had proper vaccinations — Stoltenow proposes the metaphylaxis concept. This involves treating animals with antibiotics at label rates before they become ill as they enter backgrounding or feedlot settings.

"It's short term," Stoltenow says. "The antibiotics won't do anything to a virus, but they buy time so the animal's immune system can get up to speed and fight disease."

Brumbaugh also says that to reduce costs of sick animals, it is critical to maximize the

first treatment response. He says research is showing that what is used first has greater impact than what is used second or third.

What should be expected from antimicrobials?

Both Brumbaugh and Stoltenow point out that antimicrobials will have no effect on viral causes or respiratory diseases. Brumbaugh adds that antimicrobials will not sterilize the lungs and will not heal residual damage in the lungs caused by bacteria.

Instead, he says antimicrobials should be used to control disease in cattle that are infected but are not visibly sick to help reduce disease severity.

Additionally, Brumbaugh says it is common to treat an animal with an antimicrobial and then want to retreat in three to four days. But, he says, that may not be enough time to give the medicine to work.

For example, with Pfizer's Excede,™ data show that it is possible to treat once and wait as long as seven days. Brumbaugh says, "You can't always evaluate how the animals look at the beginning, and be thinking, 'What do I use next?' It's what you use first that is important, but it has to have time to work." 