

Makin' The Gather

Introduction

There is a time-honored and necessary tradition in cow country called neighboring. For most of the folks reading this, it's well understood but it simply means that when you have to gather cattle and work them, you ask your neighbors over to help, then you in turn help them when they ask. Saves hired labor, is a great time for social exchange, and helps raise up the younger members of the cattle community to be skilled in cattle handling. Now, you maybe didn't invite me, but being the naturally friendly type I am, I thought I'd invite myself along to help you out, or maybe get in the way, for the next time you work your stock, at least in the form of some walking-around information on vaccines, how to care for and use them and where some of the prickly pear and rattlesnakes to avoid may be.

Gatherin' The Cavvy

Back when we worked everything horseback, the first job of the day was to gather the saddle stock. Somebody had to get up earlier, get the horses in, and be sure the day got started on time. Dealing with vaccines in a similar manner, my first job today is to get you all horseback with some knowledge of vaccines and how they are made. First of all, vaccine manufacturing is regulated by none other than the federal government through USDA-APHIS. (Maybe I shouldn't have told you that first off, because if I haven't lost you by now, this may be all it takes.) All vaccines have to meet efficacy and safety standards on every lot or serial, be tested according to those standards, and be approved before they can be released for sale. A representative sample of each lot or serial must be maintained by the manufacturer. (For those of you who are inclined to tippie a little, those dates on the

vaccine bottle are expiration dates, not "born-on" dates.)

There are lots of ways to classify vaccines, just like there are lots of ways to classify horses. Type, origin, what they do, and technical and practical terms come to mind. Sorrel, Quarterhorse, usin' horse, and lead and feed are all ways to talk about horses. Likewise, the term biological products includes vaccines (modified live and killed viral products) and bacterins. Generally, vaccine refers to products used to prevent or reduce severity of disease caused by viral pathogens (viruses that cause sickness). Bacterin refers to products used to prevent or reduce severity of disease caused by bacterial pathogens (bacteria that cause sickness). Modified live products work by using a small dose of reduced virulence (virulence – ability to cause disease) viruses or bacteria, giving it to the animal, allowing the "bug" to reproduce, and induce a response in the animal to which it was given. Killed products use a larger dose (in terms of bacterial or viral particles in the vaccine dose, not the actual amount of vaccine you give), usually have an adjuvant in them (adjuvants help turn on the immune response), and don't reproduce in the animal. Either way, the goal is to get the animal to be disease resistant.

Saddle Up

None of us would think of going out to do a day's work without picking the best mount we had for that day's work. We'd probably pick a different horse for sorting than for dragging to the fire, and so on. Point is, before we start out we'd have in mind which horse to use. Same is true for biological products. Selection of the right product to use depends on the situation in which it is to be used. Need for different vaccine products should depend on assessment of risk of

disease, economic benefit, and management situation. Lots of factors fit into this, and it just makes good sense to get some help in making these decisions. Looking back over my short and colorful career as a stocker pasture operator (this was before vet school), I can promise you that if I'd used a good veterinarian to advise me on managing health, I'd be more likely to still be in that business. The other thing is that vaccine programs probably should be re-assessed constantly, since class and origin of cattle, seasons, market conditions, disease incidence, and treatment response are never static, but they are a moving target. Somebody said one time that the man who represents himself in court has a fool for a client. I think you get the idea. When ole Bessie has three feet in the grave and one on a banana peel it is a little late to call Doc for help. Get your veterinarian involved on the front end, and on a regular basis. If there isn't somebody in your area interested in cattle practice, look for somebody in the region, or even outside the region. I'll bet very few of you do your own income taxes, yet you'll be reluctant to ask for help on animal health issues from a veterinarian. I'll lay you odds that you have a lot more money tied up in cows than what your tax liability is for a year.

Hump In His Back

I used to own a good sorrel horse named Cedar. I could use him for just nearly anything, and he was always predictable. One frosty morning, I saddled him up and just as I was about to load him in the trailer and leave, I noticed some heifers out, so I hopped up on ole Cedar and started to trot him around them. We did good for about two or three minutes until one of those heifers tried to break back at the gate and ole dummy (the one on top of the saddle) decided to kick him into a lope. Ole dependable Cedar hit several licks just to remind old dummy that there is a right and wrong way to do things. Vaccines, especially modified live vaccines, work the same way. First, MLV (short for Modified Live

Vaccines) are relatively fragile. They are very sensitive to light, disinfectants, detergents, heat, and time. Distributors of animal health products, like FDAH[®], are very careful to see that these biological products get to you in good condition. You're spending good money for those products, so it makes good cowboy sense to keep them in condition. Keep them stored at the temperature indicated on label (generally 35° to 45° F). Keep a refrigerator thermometer in the fridge. They cost three or four dollars, and I'll bet every one of you keeps a hundred times that amount in vaccines in the fridge sometime during the year. Protect these products from direct sunlight for as long as you can. Keeping them in a cooler when you go to the pens should take care of that, and if you throw in some ice or ice packs, you'll tend to the temperature consideration at the same time. Be sure that the syringes you use for MLV products don't have disinfectant, soap residue, or gyp/hard water residue in them. I tell folks to make a final rinse with sterile water or distilled water. Syringes and other instruments can be sterilized by boiling or by placing them, disassembled, in a pressure cooker for 15 to 20 minutes at 15 pounds of pressure. Best I remember, that's about the same way you handle garden veggies you home-can. Saved the best for last: time. Once you mix MLV products, they will retain full efficacy for about an hour, and then they begin to decline. By two hours after mixing under field conditions, those bugs are feeling pretty sick. So, my rule is simple: mix MLV products as you need them, write the time of mixing on the label, and don't use them beyond one hour post mixing. For sure, don't put partial bottles back in the fridge for tomorrow. Buy some 10 dose tanks to fill in the small numbers between the 50's so you don't have to pitch so many doses.

Bucked Off Or Missed The Apple?

I traded for a good mare one time who could turn back so good that if you weren't set, she'd get right out from under you. If you

missed your grab for the saddle horn when you weren't set, you might end up walking a ways. The question that usually comes up, especially if nobody was watching, is how you came to be afoot. Cattle exposed to vaccines do something similar. Even though the vaccine is right, the dose is right, and you took care of all the things we mentioned above, the cattle may fail to respond to the vaccine and develop immunity. Let's stop right here and get some terms clear. Health is the normal state of the animal. Vaccination is the act of injecting the vaccine or bacterin biological product into the animal. Immunization includes vaccination and the response of the animal to develop immunity. Just because we vaccinate an animal, does not mean it does its part and develops immunity. Likewise, immunity is not developed immediately as soon as you pull the needle out. It may take several days for the animal to develop a solid immunity. Science tells us that if everything is just right, only 85 to 95 percent of cattle respond to vaccination and develop immunity. In stressed cattle, potentially 60 percent or less may be able to respond to an on-arrival vaccination. Response to vaccination is a very individual thing, and a lot of factors are involved. Lets talk about a few:

Nutrition: Energy, protein, macro- and micro- mineral nutrients, and water are all essential to maintenance of the condition we call health. These must all be supplied in large enough quantities and on a regular enough basis for the animal's immune system to develop and maintain immunity. Recently, the NAHMS program, an agency of USDA, surveyed forages and hay in production settings across the country, and found almost no situation where all the essential nutrients were all available. This is the reason we supplement. We know that adequate supplies of copper, zinc, and selenium are essential for response to vaccines.

Stress: This can be social, shipping, nutritional, weaning, weather, noise... as we add additional stresses, response of the

immune system to vaccination declines. The way we market and ship calves in this country could be compared to taking a town full of 5 year old children, loading them on the bus, not giving them anything to eat for 48 hours and hauling them halfway across the country, then putting them in boarding school. Wonder how many of them would get sick?

Prior exposure and incubating disease: With shipped-in cattle, we almost always have a subset of cattle who have been exposed previously and are incubating disease, have clinical disease, or are in the recovery period. Incubation periods for IBR and BVD are considered to be around 2 to 4 and 5 to 10 days respectively, so if calves are exposed at auction barns, collection points, or in transportation, they can potentially be in the latter stages of incubation on arrival at your place.

Interaction with other products: If two or more products are introduced into the same location in tissue, one or both may be adversely affected. Also, where products are given subcutaneously or between muscle divisions, they can migrate as the animal moves or with gravity. For these reasons, a good rule of thumb is to keep injections separated by 3 or 4 finger widths. Also, some veterinarians believe that it is possible to overload the immune system with vaccine antigens so that poor response is gained to any of the products administered. If you think about it, we may give four types of viral antigens (IBR, BVD, PI-3, BRSV), four to seven Clostridial antigens (in the 4 or 7-way "blackleg"), one to four gram-negative bacterins (*Pasteurella hemolytica*, *Pasteurella multocoda*, *Hemophilus somnus*, maybe even *Salmonella*), and maybe even a Pink-eye (another gram-negative). That's a total of 16 antigens. And, I have seen cases where an injectable vitamin and injectable wormer were given at the same time too. (This would be a good place for a commercial for ole Doc, but I'll let this one pass.)

Previous expose to vaccines:

Normally this has a positive effect on response, and the animal can respond maximally, since it is already geared up to do so. This has been referred to as a booster or anamnestic response. Boosters should be given at proper intervals; read the label.

Toxins: Cattle may be exposed to environmental or feed borne toxins. A good example is aflatoxin sometimes found in some feedstuffs. Total ration levels of aflatoxin greater than 100 parts per billion can retard response to vaccines.

Now when we take all of the things that could go wrong, it is easy to understand that there is almost always a subset of any group of cattle that can't mount an immunological response to a vaccine. We often manage around this with either revaccination or booster doses or both. Revaccination is a second dose of vaccine administered 7 to 14 days after the initial dose, to try to pick up those animals who didn't

respond to the first. By this time we may have corrected stress, nutrition, exposure or other problems present at the primary vaccination. A booster can be considered as a second vaccine exposure which stimulates the animal to develop a high quality of immunity (watch cattle for several hours following vaccination). For animals who responded to the first dose of vaccine, the revaccination may indeed produce a booster response.

In The Pen

I hope my trip to your gather has helped clear up some things for you about vaccines. And, I hope it has created some questions as well, so that you will seek out some answers that fit your operation. Fort Dodge is always glad to hear from you and I'll bet your FDAH[®] rep can put you in touch with us.

Thanks for the chance to neighbor!

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