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Accuracy Counts

Leveraging preventative health and treatment dollars is all about giving the right product, in the right dosage, in the right way.

STOCKER HEALTH TREATMENT ESSENTIALS:

- Dose animals with pharmaceuticals individually, based on actual weight
- Handle pharmaceuticals according to label directions
- Administer pharmaceuticals and vaccines with Beef Quality Assurance in mind

Treating cattle and animal health products as if they were all cut from the same cloth can make for easier and quicker processing and treatment. Unfortunately, this one-size-fits-all approach is also a sure way to squander dollars and opportunity.

The good news is that when you give cattle too much or too little by treating them on the average, you'll really never know just how much money you're wasting.

ESSENTIAL: WEIGHTS BEAT ESTIMATES

Since vaccine dosages aren't dependent on the weight of the animal, it's too easy for some folks to use the same standard-dose strategy when administering animal pharmaceuticals, which are dependent on weight. Moreover, if weight is considered in dosing, veterinarians and animal health professionals say too often the weights used are average lot weights estimated with eyeball scales.

For perspective, while there is no industry-wide stocker-specific data available, according to the National Animal Health Monitoring Service (NAHMS), only 25% of feedlots responding to that organization's most recent survey report recording weights at the time of treatment.

The result of treating animals based on average weight is that, on average, cattle are either over-dosed or under-dosed. In fact, according to a Kansas State University (KSU) study examining the issue, eyeball estimates mean more than 28% of the cattle are mis-dosed by 10% or more, and over half are mis-dosed by 5% or more. More specifically, the study assumed the average weight of each lot was used to determine the dosage of either an anthelmintic or a metaphylactic antimicrobial treatment for all animals in the lot. The frequency and degree of potential individual animal under-dosing was then calculated. Of the

Profit Tip: Cattle should be held off feed 12 hours before treatment with any of the white drench dewormers (Safeguard, Synanthic, Valbazen). The presence of feed in the rumen will reduce the effectiveness of these dewormers.

6,231 head involved, over 28% (1,770 head) would have been under-dosed by 5% or more. Over 13% (831 head) would have been under-dosed by 10% or more. Nearly 6% (366 head) would have been under-dosed by 15% or more. Over 2% (128 head) would have been under-dosed by 20% or more. Over 0.5% (35 head) would have been under-dosed by 25% or more.

Considering that 10% error is the threshold past which biologically significant impact may occur, the problem is obvious. Under-dose cattle with anthelmintics and they can still carry a significant parasite burden, decreasing performance. Coming up short on antimicrobials can lead to poor treatment response, resulting in an increased incidence of re-pulls, chronics and mortality.

On the flip side, besides wasting dollars needlessly, over-dosing cattle can lead to toxicity problems and can extend withdrawal times prior to harvest.

It's impossible to calculate potential losses across product classes for mis-dosing because product dosage and efficacy varies between specific products. However, there are plenty of quantitative evidence and practical experience underscoring the costs associated with missing the mark on cattle health.

As an example, in the ongoing Texas Ranch to Rail program, cattle treated even once in the feedlot were worth $80.12-$151.18 less in net return than cattle that remained healthy. Each time cattle are re-pulled they lose more performance, while cost increases. Given the exponential rate of profit loss that goes with each re-pull, some cattle feeding organizations rail them after the second time, cutting their losses.

ESSENTIAL: CATTLE TREATMENT FOLLOWS PRODUCT TREATMENT

Do you know the most common reason for vaccine failure? According to veterinarians at the University of Arkansas it's users ignoring the label directions. Add that to the 30-40% of Bovine Respiratory Disease vaccinates they claim will not respond due to stress, illness or a sub-par immune system, and vaccines are blamed unfairly for a host of manmade problems.

Yes, cleanliness is a must when it comes to getting the goody out of animal pharmaceuticals and vaccines without inflicting inadvertent harm. Just as important, though, realizing the expected benefits of animal health pharmaceuticals or vaccines depends on complying with the FDA-approved handling instructions detailed on product labels. Ignore these rules and all bets are off relative to animal response, never mind the extra-label harm that can occur.

For instance, products are often packaged based on their sensitivity to sunlight and temperature. Load a syringe from a brown bottle-in brown because sunlight can inactivate the product-keep the bottle shaded, but leave the loaded syringe laying in the sunlight between animals and you've squandered your other preventative efforts.

As a rule of thumb, veterinarians point out all Modified Live Virals (MLV) are susceptible to sunlight, even if they're exposed to it for just a matter of minutes. Similarly, the viral particles in MLV vaccines come to life as soon as the vaccine is reconstituted, then they gradually start to die off. Consequently, if you mix up more MLV vaccine than you can use in an hour, enough viral particles may die that the vaccine is ineffective.

Likewise, non-clear vaccines such as Black Leg should be kept thoroughly mixed until the bottle is used up since the suspended particles will settle out over time. But, don't beat on the bottle to mix it up unless you want to damage cellular particles and run the risk of that damage releasing endotoxins; swirl them gently instead.

Bottom line, if a label calls for refrigeration and keeping the product at a cool temperature, then do it, but don't assume colder than directed is better. And, don't figure the dashboard of your pickup represents the label-defined "room temperature" even with both windows rolled down.

For that matter, never mix ingredients together that aren't designed specifically to be blended. Doing so with antibiotics can create an obvious physical reaction, an unseen chemical one, or may chemically neutralize the efficacy of each vaccine in the mix. The same goes for accidental mixing. For instance, water left inside a cleaned syringe, then accidentally injected into the bottles of some avermectins can cause them to precipitate out, making them useless. Read and follow the directions.

Product Handling-All Products

- Read the label. The instructions for handling and administration should be there.
- If products require refrigeration, make certain that they are refrigerated when you purchase them, keep them refrigerated prior to use, and keep them refrigerated while chuteside. Ice packs or a frozen gallon jug of water inside an ice chest work well to keep products cool.
- Be careful; you can get too much of a good thing. Some products that require refrigeration may be damaged if allowed to freeze.
- If products are designed to be stored at room temperature, or within a specified temperature range, it is important to follow the manufacturer's temperature guidelines. These products may be inactivated if allowed to get too cold or too hot. The dashboard of a pickup exceeds room temperature quite regularly!
- You cannot always see physical changes that indicate that a product has been damaged by excessive cold or heat, so you have to know how it was cared for prior to use to ensure that it will work as intended.
- Mark all syringes so that you know which product they contain while chuteside. A piece of masking tape, or a piece of colored tape (different color for each product), with the name of the product written on the tape with a Sharpie pen is ideal.
- Do not pour injectable products from original packaging into a larger container. The injectable product was sterile when manufactured, but when you change containers there is a high probability of contaminating the whole container of product.
- Never re-enter a bottle with a used needle. The likelihood of contaminating the rest of the bottle of product is high. Put a new needle on the syringe each time you have to re-enter the bottle.
- To avoid having to re-enter a bottle, use a draw-off assembly and automatic refill syringe.
- Change to clean equipment any time existing equipment gets dirty enough that it creates a risk for injection site contamination.
- Clean and disinfect syringes and equipment at the end of each day's use. Washing them out with water from the horse tank does not constitute proper cleaning.

Product Handling-Pharmaceuticals

- If products are in a brown bottle, the contents inside can be inactivated by sunlight. Keep them out of the direct sunlight. This means off the dashboard of your pickup.
- The injectable avermectins (Ivomec(r), Dectomax(r)) are susceptible to inactivation by sunlight. The cardboard carton containing the plastic bottle of Ivomec will protect the bottle from sunlight, but the product is susceptible to inactivation once the plastic bottle is outside the carton. Don't leave the plastic bottle laying on the tailgate of your pickup all day while processing cattle. Dectomax comes in a brown bottle, so it is less likely to be damaged by sunlight. However, once you load either product into a syringe, the sunlight can affect it while in the syringe.
- Do not get water in syringes or equipment used to administer injectable Dectomax. More importantly, be sure not to inject any water back into the product bottle. Water will cause the product to precipitate out (you will see little crystals) and render it useless.
- Even when using injectable antibiotics, cleanliness is essential. The antibiotic in the bottle will not necessarily kill any and all contamination that you get in it.
- Do not mix different antibiotics in the same syringe or bottle as some cause an obvious physical reaction, some cause an unseen chemical reaction, and some antibiotics work by conflicting modes of action, which may neutralize the activity of each other.

Product Handling-Vaccines

- All modified live viral (MLV) vaccines are susceptible to inactivation by sunlight. When using them, keep the bottles in the cooler out of the sunlight. Also, keep the syringes out of the sunlight; sunlight will kill the vaccine in the syringe if left exposed to sunlight for more than a few minutes. Use of a cardboard box laid on its side with the open side facing away from the sun will serve as a shade over the syringe.
- Modified live bacterial vaccines should be handled in the same manner as MLV vaccines.
- Do not reconstitute (mix up) more MLV vaccine than you will use in 1 hour. As soon as this type of vaccine is reconstituted the viral particles come to life then gradually start to die off. If you take too long to use the product up after reconstitution, enough virus may die to make the vaccine ineffective.
- Keep the reconstituted product cool.
- Do not combine different vaccines in the same syringe unless they are manufactured to be mixed together (i.e., do not mix Lepto-5 from one manufacturer with MLV IBR-BVD from another manufacturer, even though each manufacturer may sell a combination product containing both MLV IBR-BRD and Lepto-5). Unless the components are specifically made to be mixed together by the manufacturer, one portion of your mix may inactivate the other portion.
- Keep vaccines thoroughly mixed until the bottle is completely used up. This is especially critical with any non-clear vaccines (such as blackleg). Suspended particles will settle out over time.
- Do not beat vaccines to get them into suspension. Swirl them gently to keep from damaging cellular particles and/or releasing endotoxins.
- Use disinfectant-soaked sponges in a plastic paint tray to disinfect needles between animals. Stick the needle into the sponge to physically clean the needle. Change the sponge when it becomes visibly soiled.
- DO NOT use disinfectants with MLV vaccines. The disinfectant will kill the vaccine! Wash out the syringe and other equipment utilized with MLV vaccines with sterile water only. Change needles at least every 10 head instead of using the disinfectant-soaked sponge and paint tray.
- It is safe to use disinfectants with killed vaccines (blackleg, killed IBR-BVD, etc.), antibiotics and other pharmaceuticals.

Be Clean But Be Right

Finally, understand that wrong sanitation can be as detrimental to treatment as none at all.

Obviously, you don't want to wipe a dropped needle on your sodden pant leg and call it clean. But you also need to understand that effective sanitation depends on the product.

As an example, using disinfectants to clean equipment used with antibiotics and killed vaccines represents sound management.

Use the same disinfectant on equipment to be used with MLV vaccines, though, and you destroy it. With MLV vaccines many veterinarians recommend simply using sterile water to wash off equipment, and a new needle every 10 head or so.

Profit Tip: Get the Most From Implants

- Make sure the ear is clean before implanting. Clean it with disinfectant and dry with paper towel if necessary.
- Ear-tag before implanting to avoid knocking out the implant with the tag.
- Use a disinfectant-soaked sponge and plastic paint tray with implant guns. Wipe both sides of the needle on the top of the sponge.
- Insert the implant needle at a point that will allow you to deposit the implant in the middle 1/3 of ear. Avoid existing implants, ear tags and tag holes.
- Feel the implant to make sure that you didn't fire a blank.

ESSENTIAL: TREAT CATTLE WITH THE END IN MIND

Of course, producers can use the right product, in the right amount, handle the product correctly and still fail. In this case, they may realize the expected animal response to the vaccine or pharmaceutical but harm the economic value of the animal because of how they administered the product.

- DO NOT inject products into top butt or leg.
- Inject all products in neck.
- Use subcutaneous (SC) 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 products, use an 18 or 16 gauge needle. Make sure you have adequate restraint to prevent needle breakage if you plan to use 18 gauge needles. For thicker products use a 16-gauge needle. Never use a 14-gauge needle except for intravenous (IV) injections.
- Use either 3/4 inch or 1-inch length needles for subcutaneous (SC) injections.
- Use 11/2-inch length needles for intramuscular (IM) injections in larger cattle. It may be necessary to restrict needle length to 1 inch in smaller calves to avoid hitting the bones in the neck.
- Follow label instructions or veterinarian's recommendations for proper dose of product.
- Follow label instructions regarding maximum volume per injection site. Most products are limited to 10-15 ml per injection site.
- Space injection sites at least 4 inches apart. This is a normal hand's width.
- Place injections side-by-side instead of one over another. This is especially critical with subcutaneous injections where the materials may gravitate and run together under the skin.
- Be sure to observe withdrawal times.

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For more information and fact sheets pertaining to other topics of interest to stocker operators, visit www.beefstockerusa.org.

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