K·STATE
Research and Extension

Proper Handling and Administration of Cattle-Health Products

A.J. Tarpoff, DVM, MS
Extension Beef Veterinarian

Considerable research goes into developing pharmaceutical products for the cattle industry. Animal-health companies incorporate many quality control steps in the manufacturing process to ensure products work as intended. After purchase, the buyer assumes responsibility for handling products in a way that maximizes benefits. The following suggestions may help products work to their full potential.

All Products

Read the label and package insert.

Note the instructions for handling and administration. If a product requires refrigeration, do this as soon as possible after purchase. Keep these products refrigerated before use and while chute side. Ice packs or a frozen gallon jug of water inside an ice chest work well to keep products cool. In colder climates, the ice chest or cooler acts as an insulator to keep products from freezing while working chute side.

Check and maintain proper temperature.

Products that require refrigeration can be damaged if allowed to freeze or get too warm. Place a thermometer in the refrigerator and check it regularly to ensure proper storage temperature. A refrigerator that does not maintain correct temperature should not be used to store animal health products.

Check packages for proper temperature when they arrive. This is especially important for drop-shipped deliveries. For products to be stored at room temperature or within a specified temperature range, follow the manufacturer's guidelines. Products allowed to get too cold or too hot can be damaged. You cannot always see physical changes that indicate that a product has been damaged by excessive cold or heat. You have to know how the product was cared for before use to know if it will work as intended.

Label syringes to easily identify products.

You should be able to tell at a glance what product the syringe contains while chute side. Use a piece of masking tape or a different color tape for each product. Write the name of the product on the tape with a permanent marker.

Leave injectables in the original container.

Do not pour these products into a larger container. The injectable product was sterile when manufactured, but when changing containers, there is a good chance of contaminating the whole container.

Do not re-enter a bottle with a used needle.

If you do, there is a good chance of contaminating the rest of the product. Attach a new needle to the syringe each time you have to re-enter the bottle. To avoid this altogether, use a draw-off assembly and automatic refill syringe. Do not leave a sterile needle in the stopper of a product bottle. The needle exposes the inside of the bottle to dust and other environmental contaminants. Switch to clean equipment any time existing equipment is dirty enough to risk injection site contamination.

Clean up at the end of the day.

Clean and disinfect syringes and equipment at the end of each day's use. Follow the manufacturer's cleaning instructions, which can be found in the package insert of the reusable syringe. Do not use disinfectants to clean syringes for modified live viral (MLV) vaccines. After cleaning, dry syringes and store in a sealable bag or container to keep them clean until the next use.

Pharmaceuticals

Keep products out of the sun.

Any product that comes in a brown bottle can be inactivated by sunlight. Even some products in clear bottles can be damaged by ultraviolet (UV) radiation.

It is good practice to protect all animal-health products from direct sunlight.

As an example, the injectable avermectins (Ivomec, Dectomax) are susceptible to inactivation by sunlight. Ivomec comes in a plastic bottle in a cardboard carton. Once it is removed from the carton, it loses protection. Do not leave the bottled product in the sun all day while processing cattle. Dectomax comes in a brown bottle, so it is less likely to be damaged by sun exposure. Once loaded in a syringe, either product can be affected. Keep loaded syringes out of the sun.

Make sure syringes are dry.

Syringes or equipment used to administer injectable Dectomax should be thoroughly dry before use. More importantly, be careful not to inject water back into the bottle. Water causes the suspension to separate and renders the product useless. You may see little crystals if this happens.

Hold the feed before deworming.

Before treating cattle with white drench dewormers (Safeguard, Synanthic, Valbazen) hold animals off feed for at least 12 hours. The presence of feed in the rumen reduces the effectiveness of these dewormers.

Cleanliness is essential, even with antibiotics.

Cleanliness is essential even when using injectable antibiotics. The antibiotic in the bottle will not necessarily kill contaminants injected into it. Do not mix different antibiotics in the same syringe or bottle. This may cause an obvious physical reaction or a hidden chemical reaction. Antibiotics with conflicting modes of action can neutralize each other.

Vaccines

All modified live viral (MLV) vaccines can be inactivated by sunlight.

When in use, keep bottles in a cooler out of the sun. Same goes for syringes. Sunlight will kill the vaccine in the syringe within minutes. A cardboard box with the open side facing away from the sun or Styrofoam cooler with circular holes cut into it to hold syringes can help to shade and protect the vaccines. Modified live bacterial vaccines should be handled in the same manner as MLV vaccines.

When preparing live vaccines, do not reconstitute more than you can use in an hour.

As soon as MLV vaccine is reconstituted, the viral particles come to life, then gradually start to die. If you take too long to use the product after reconstitution, enough viral particles 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. For example, 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.

Many products must be reconstituted with sterile saline before administration. Transfer needles are often used for this task. Transfer needles must be sterilized and stored in a clean environment. The transfer needle can be the culprit of product contamination if not managed properly.

Mix vaccines completely but gently.

After mixing, examine the contents of the bottle to ensure complete suspension. Small amounts of precipitates may linger in the fluid before fully dissolving. When mixing, do not shake the bottles. Swirl the bottle gently (mild agitation) in your hand to keep from damaging cellular particles in the vaccine or releasing endotoxins. Keep vaccines thoroughly mixed until the bottle is completely empty. This is especially critical with any nonclear vaccines such as blackleg. Suspended particles will settle over time.

Know the route of administration.

There are several intranasal vaccine products on the market. These are MLV vaccines delivered via a cannula (nose tube) instead of a needle. It is recommended that you change cannulas between animals. Mix and handle these products the same way as injectable products. It is critically important that you do not accidentally inject these products under the skin as this will cause an injection site reaction. These vaccines often come packaged with a rubber cannula.

Know how and when to disinfect.

Use disinfectant-soaked sponges in a plastic paint tray to disinfect needles between animals. Drag the needle on both sides over the sponge to remove any contaminants. Change the sponge when it becomes visibly soiled. A cardboard box can be used on end to prevent splash contamination from cattle movement. This may extend the use of the sponge and tray.

Do NOT use disinfectants with MLV vaccines. The disinfectant will kill the vaccine. Wash out the syringe

and other equipment used with MLV vaccines with sterile water only. Change needles at least every 10 head. It is safe to use disinfectants with killed vaccines (blackleg, killed IBR-BVD), antibiotics, and other pharmaceuticals.

Implants

Some implants must be refrigerated. Keep them cool at chute side before use. Make sure the ear is clean before implanting. Clean it with disinfectant and dry with a paper towel if necessary. Insert the ear tag before implanting to avoid knocking out the implant. The middle "valley" of the ear is the preferred location. Use a disinfectant-soaked sponge in a plastic paint tray with implant guns. Wipe both sides of the needle on the top of the sponge to clean the needle and apply a light coating of disinfectant. Turn the sponge over when the top side gets dirty. When that side is dirty, replace disinfectant and switch to a clean sponge.

Insert the implant needle and position it to deposit the implant in the middle one-third of the ear. Inserting the needle too close to the base of the ear may affect the absorption. Avoid placing implants near ear tags, existing implants, and tag holes. Feel the implant to make sure you did not fire a blank.

Industry Standards

Use Beef Quality Assurance techniques and guidelines suggested by the National Cattlemen's Beef Association. Do NOT inject products into top butt or leg. Inject all products in the neck. Use subcutaneous (SC) route of administration unless intramuscular (IM) route is specified. Select a clean area, or clean the area before injection.

Use the proper diameter needle.

For products the consistency of water, use an 18- or 16-gauge needle. Make sure you have adequate animal 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 ½- or ¾-inch-long needles for subcutaneous (SC) injections. Use 1-inch to 1½-inch-long needles for intramuscular (IM) injections in larger cattle. You may need to restrict needle length to 1 inch in smaller calves to avoid hitting the bones in the neck or the major ligament running directly above the spine. Use 1½-inch-long needles for intravenous (IV) injections.

Administer the proper dose.

Follow label instructions or veterinarian's recommendations for proper dose of product. Follow label instructions regarding maximum volume per injection site. Do not administer more than 10 mL (cc) per injection site. Exceeding the recommended volume per injection site may result in serious injection-site blemishes and increase the withdrawal time beyond that listed on the label.

Space injection sites at least 4 inches apart.

This is about a normal hand's width. Place injections side by side (horizontally) instead of one over another (vertically). This is critical with subcutaneous injections because materials can gravitate and run together under the skin.

Keep records.

Document dates and product use for all animal-health products. Observe preharvest withdrawal times.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, John D. Floros, Director.

MF2603 July 2017