

Alabama Beef Quality Assurance

Administering Cattle Health Products Properly

► **Selecting the best route of administration, choosing the correct needle, choosing the correct injection site, practicing good sanitation, handling drugs correctly, and proper restraint will ensure proper action of the drug and will reduce or eliminate injection-site lesions and violative drug residues.**

Properly administering animal health products maximizes product efficacy and helps prevent injection-site lesions and violative drug residues. The most effective way to use animal health products and the best way to avoid problems is to simply follow all label directions approved by the U.S. Food and Drug Administration (FDA) and then identify each animal that receives the product at the time it is administered. Proper administration includes selecting the route of administration, choosing the correct needle size and injection site, practicing good sanitation, handling drugs correctly, providing proper animal restraint, and adhering to FDA-approved withdrawal times. A withdrawal time is the period of time that must lapse following product administration before the treated animal can be harvested for food.

Select the Best Route of Administration

Animal health products can be administered by several different routes, with the FDA-approved route(s) for a particular product listed specifically in the product directions located on the medication bottle, on the product container, and/or on the product insert. The most common routes of administration for cattle health products are as follows:

- By mouth (oral/PO)
- Given by injection into a vein (intravenous/IV), into a muscle (intramuscular/IM), or beneath the skin (subcutaneous/SubQ)
- Placed in the eye (ophthalmic) or the ear (otic)
- Sprayed into the nose (nasal)
- Applied to the skin (cutaneous) for a local (topical) or body wide (systemic) effect
- Infused into a mammary gland (intramammary/IMM)
- Inserted into the vagina

Most injections are given either intramuscularly or subcutaneously. All injections should be given in front of the shoulder, and no more than 10 mL (cc) of drug should be administered per injection site. A product's FDA-approved label will provide an acceptable route of administration. In some cases, the label may specify more than one route of administration. When the label allows for either subcutaneous or intramuscular injection, administer the drug subcutaneously to reduce the chances of injection-site lesions in the muscle.

When giving a subcutaneous injection, use the tenting method (fig. 1). Pull the skin away from the neck to create a gap between the skin and muscle. Insert the needle through the skin and into the gap at a 45-degree angle (fig. 2). Make sure that the needle does not go into muscle. Carefully inject the drug, making sure the tip of the needle remains in the gap created by tenting. When finished, slowly remove the needle.



Figure 1. Use the tenting method for subcutaneous injections.

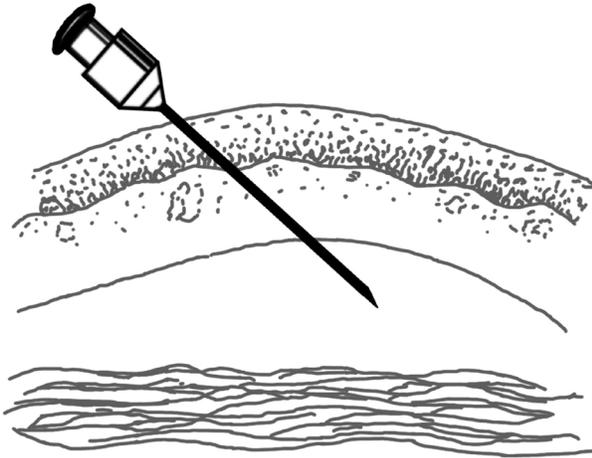


Figure 2. For subcutaneous injections, insert the needle through the skin and into the gap at a 45-degree angle

Giving an intramuscular injection requires a different technique. The drug is intended to be injected into a muscle (fig. 3). Place your hand on the animal and move the skin slightly to one side. Insert the needle through the skin and into the muscle. While rare, check that the needle is not in a blood vessel by pulling back on the plunger and observing for blood flow in the tip of the syringe. If blood appears, remove the needle and insert it into a different location at least one inch away from the original injection site. Check again until no blood is drawn up into the syringe. Carefully inject the drug. When complete, remove the needle and then move your hand. By moving the skin slightly, there is less chance of the drug leaking out through the injection site.

Choose the Best Location for the Injection

The best location for an injection is not necessarily the most convenient one. Instead, it is the site where the product will be most beneficial without damaging expensive cuts of meat. Keep all injections in front of the shoulder. NEVER INJECT INTO THE LOIN, TOP BUTT, OR RUMP (fig. 4). For most cattle health products, the triangular mass of neck muscle is the only acceptable site for both intramuscular and subcutaneous injections. However, some products are FDA-approved for subcutaneous injection in the middle third of the posterior aspect of the ear or in the posterior aspect of the ear where it attaches to the head (base of the ear), but this site is only acceptable if specifically stated on the FDA-approved product label. Never inject more than

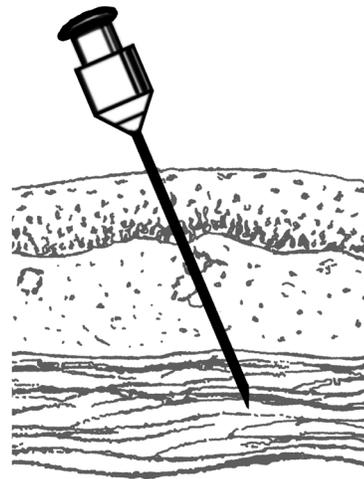


Figure 3. Insert the needle through the skin and into the muscle for a intramuscular injections.

10 ml (cc) into one site. When making multiple injections, keep injection sites at least 4 inches apart, being careful not to reuse injection sites. To minimize the risk of injection-site lesions, avoid injecting in wet or manure-covered areas.

Choose the Correct Needle

Only sharp needles should be used for giving injections. Dull or worn needles cause additional tissue damage to the hide and muscle. The correct needle size and length are important to ensure that the entire dose of the drug gets into the animal properly, with the least amount of tissue damage.

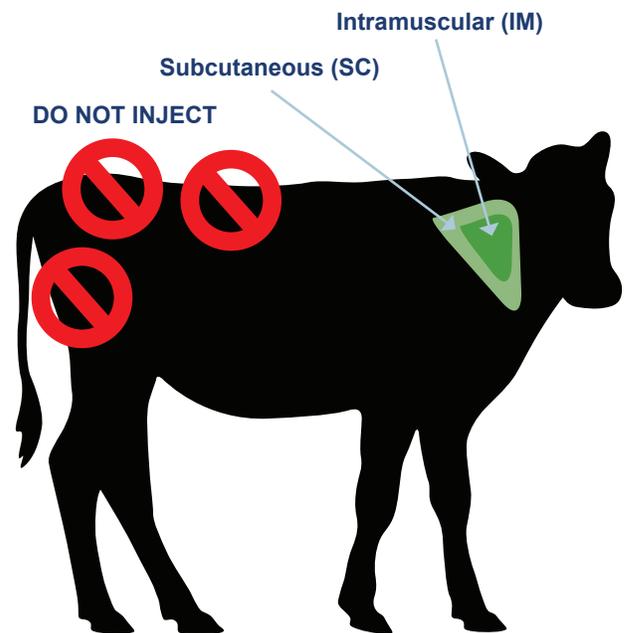


Figure 4. Never inject cattle in the loin, top butt, or rump. For most cattle health products, the triangular mass of neck muscle is the only acceptable site for both intramuscular and subcutaneous injections.

Selecting the proper needle size (table 1) will also reduce the chances of needle breakage. Proper needle size depends on several things, including consistency of the product, route of administration (intramuscular or subcutaneous), and size of the animal. Some products are thicker (more viscous) and harder to force through a smaller-gauge needle. With a thicker, more viscous product, such as most antibiotics and dewormers, it takes too long to give the injection with a smaller-gauge needle. Smaller-gauge needles should only be used for less viscous drugs such as most vaccines and reproductive hormones. Use only 18- or 16-gauge needles, ½” to ¾” long to administer a subcutaneous injection (under the skin). Use only 18- or 16-gauge needles, 1” to 1½” long to administer intramuscular injections (in the muscle); use 1” for lighter animals, and 1½” for heavier animals. A 14-gauge needle is NOT recommended. It is twice the diameter of a 16-gauge needle, increasing the risk of tissue damage and leakage from the injection site.

If a product such as a modified live vaccine needs to be reconstituted, use a transfer needle to help make the process easier and more sanitary. To properly use a transfer needle, stick one end into the sterile liquid or diluent first. The other end of the transfer needle then goes into the freeze-dried cake of vaccine. There should be a vacuum to pull the liquid immediately into the vial containing the freeze-dried cake. If this vacuum does not exist, discard the vaccine because it may be contaminated.

Practice Good Sanitation

Good sanitation is essential in minimizing the risk of spreading infection, contaminating drug bottles, or causing injection site reactions. Make sure the injection site is clean and free of mud and manure, and avoid injecting into damp or wet cattle. Never insert a contaminated needle into a drug bottle. Use separate needles for filling syringes and injecting animals. New needles are recommended for every animal to decrease the likelihood of disease transmission and post-vaccination abscesses. If needles are re-used on multiple animals, they should be changed at a minimum each time a multidose syringe is filled or every 10 injections, whichever comes first. Replace burred or bent needles immediately. A burred needle will cause greater tissue damage when entering the animal, increasing the risk for the entrance of foreign matter, and a bent needle is more likely to break off inside the animal. Do not straighten and re-use bent needles.

Table 1. Recommended Needle Sizes

Weight, lb.	Injection Method			
	Subcutaneous (SubQ)		Intramuscular (IM)	
	Gauge	Length, in	Gauge	Length, in
Less than 300	18	½–¾	18	1
300 to 700	16–18	½–¾	16–18	1
Over 700	16–18	½–¾	16–18	1–1½

If multidose, re-usable syringes are used, be sure to sterilize properly after use. Use boiling water or an autoclave to clean syringes used for modified live virus vaccines, but DO NOT use a disinfectant with syringes and needles used to administer a modified live vaccine. Even a trace of disinfectant can inactivate a modified live vaccine.

Handling Drugs Correctly

To handle drugs correctly, read and follow FDA-approved directions on the label and/or package insert. Incorrect handling, storage, and use will reduce or eliminate the effectiveness of a drug.

Use separate syringes for different products. Clearly mark the syringes and keep them separate. Do not mix multiple products in a single syringe as this could potentially inactivate one or both products. For example, mixing two different vaccines will not produce one that will protect against both diseases. Mixing unlike products can actually destroy the effectiveness of both products. If the vaccine combination you want is not available, give separate injections at least 4 inches apart.

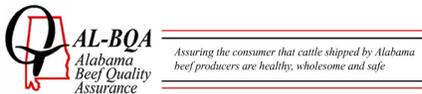
After filling a syringe, point it straight up and depress the plunger enough to move the drug up to the needle tip. This will ensure that no air is trapped in the syringe. Air trapped in a syringe can be injected with the drug, causing the wrong dosage to be administered or the drug to leak from the injection site.

Before using vaccines, especially large dose bottles, mix the vaccine thoroughly, but not vigorously. Periodically stop and mix the bottle by inverting it several times to prevent the vaccine from settling out, causing inconsistent amounts of vaccine ingredients in each injection.

A modified live vaccine, once mixed, begins to lose potency. Mix only enough vaccine for about 30 minutes. Keep vaccines cool and out of sunlight.

Properly Restrain Animals

Proper animal restraint is essential to minimize the risk of human and animal injury. Placing the animal in a squeeze chute is the most efficient restraint method. Work cattle in a manner that will minimize their freedom of movement, as this will decrease the possibility of damage to the animal and reduce the risk of injection-site reactions.



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