



Giving Injections to Cattle

Properly administering injections is an important management practice.

by Heather Smith Thomas

Proper administration of injectable products, such as vaccines, antibiotics, and injectable vitamins or minerals, is imperative to minimize tissue residue, injection site lesions and the risk of reactions. Additionally, correct administration is necessary to honor producer commitments to provide a safe, ethical product for the consumer.

Having observed the number of abscesses from improper injections has recently declined, Shannon Williams, a Lemhi County Extension educator in Salmon, Idaho, says producers have improved their administration tactics. To ensure these improvements continue, Williams stresses the importance of reading labels.

"It's important to read product labels. Vaccine companies often update their labels," she says, noting proper dosage

or injection sites may vary from label to label. For example, a product given intramuscularly (IM) in the past, or with an option for an IM or a subcutaneous (SQ) injection, may now be labeled for SQ use only.

Due to the varying nature of labels and vaccine products, Williams adds a solid producer-veterinarian relationship is critical.

"You need a good working relationship with your vet to get advice on vaccination issues or injection techniques," she says. "Your vet should be up-to-date on the latest vaccines and antibiotics, and you might want to change to a product that has fewer reactions or produces less irritation at the injection site."

Below, Williams shares a few tips on injection sites, IM, SQ and intravenous (IV) injection protocols, and handling needles.

Injection sites

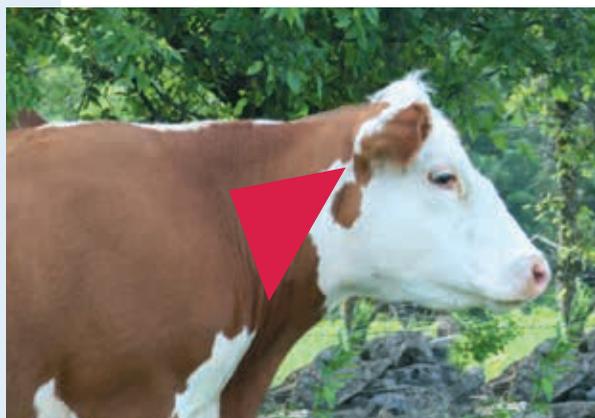
For vaccines, IM and SQ injections should be given in the triangular mass of muscle on the side of the neck. The acceptable area starts about three fingers' width behind the ear and extends down to a few inches in front of the shoulder. Injections should avoid the top of the neck — which contains a thick ligament — and the bottom of the neck — where the windpipe, esophagus and jugular vein are located.

For administering antibiotics, the side of the neck is a preferred location regardless of whether the product is given IM or SQ.



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If the total dosage requires more than 10 cc, the product must be administered in multiple sites, no closer than 4 inches apart, to have adequate tissue to absorb the medication. If more than one product is being given at the same time, the sites should always be at least 4 inches apart.

Most shots should be given in the neck to avoid injecting into parts of the body

that will eventually become important meat products. Any scarred or damaged tissue can be trimmed from the neck at harvest. Scar tissue (gristle) in the neck is not as critical, since neck muscle is usually made into hamburger. There are also some long-acting antibiotic products that can be injected under the skin on the back of the ear while still avoiding major veins.

The rump is unacceptable for injections, even though these thick muscles are better for absorbing a large injection. Many types of injections can create scars or an abscess, which would damage any meat product harvested from the rump.

In all cases the animal must be adequately restrained before administering any type of injection. Without proper restraint, a difficult administration may result in wasted product or potential risk to the animal.

Intramuscular injections

IM injections must go deep into the muscle. For an adult cow, needles should be 1 to 1.5 inches long. Use a 16-gauge needle large enough in diameter to go through thick skin without bending or breaking. Using any needle size bigger than a 16 gauge may cause tissue damage or product leakage. For calves, smaller needles should be used — 18 gauge and 1 to 1.5 inches long. Remember needle diameter is determined by gauge size — the smaller the number, the larger the needle.

To reduce chances of leakage after the injection, the needle should remain inserted for 2 seconds after the injection before removing it from the muscle. Another way to prevent leakage is to pull the skin taut across the injection site with one hand while injecting with the other and then releasing the skin after removing the needle. The skin then shifts back over the injection site and closes it.

When using a trigger-type syringe for IM shots, thrust the needle into the muscle and pull the trigger. When using a smaller or disposable syringe, detach the needle, press a hand firmly against the skin to desensitize the site, then thrust the needle in quickly and forcefully. A new, sharp needle will insert easier and causes less pain or damage than a dull one. If the animal jumps, wait until it settles down before attaching the syringe to the inserted needle and giving the injection. If the needle starts to ooze blood, that signals a vein has been punctured. In this case remove the needle, and try a different spot, as an intramuscular product should never be injected into a blood vessel.

Always consult with your veterinarian for instructions on how to properly and safely administer all types of injections.

Subcutaneous injections

For a SQ injection, lift a fold of skin on the neck or shoulder where the skin is loosest, and slip the needle between the skin and muscle. If using a trigger-type syringe, aim it alongside the animal so the needle goes under the skin and not into the muscle. For a small calf, it may be easiest to give a SQ injection under the loose skin of the shoulder.

Giving injections SQ allows for a shorter needle to be used. If administering with a trigger type syringe, a 3/4-inch needle may be used. If the needle is going to be slid between the skin and the muscle, needles can be up to 1 inch in size.

Intravenous injections

Some medications will act faster and will more readily absorb if given IV. Certain medications can be irritating to muscle tissue and must be given by IV.

Any large vein will work for an IV injection, including the milk vein ahead of the udder on a lactating cow or the jugular vein on either side of the neck in the groove above the animal's windpipe and esophagus. A large needle — at least 16-gauge and 1.5 inches long — works best for adult animals.

For IV injections, needles and any other equipment must be sterile. If injecting into the jugular vein, press down on the vein with fingers or a fist to build up pressure — this will force the vein to become more prominent and easier to inject. Still pressing on the vein, insert the needle into the pressurized area and move the needle a little forward within the vein so it is parallel with the neck. If blood flows freely from the needle, it is in the vein and the syringe can be attached (or tubing if giving fluid). If giving fluid, the needle must be in the vein awhile. In this instance, an IV catheter should be used, as it is longer than a needle, more flexible and stays more securely in the vein.

Again, always consult with your veterinarian for instructions on how to properly and safely administer all types of injections.

Needles

A clean needle and syringe of appropriate size should be selected for injections. If using a single-dose syringe, select a small syringe for a small injection and a larger syringe for a large dose. Measuring an accurate dosage for a small shot is easier with a small syringe, whereas larger dosage volumes can be accommodated by a larger syringe.

Always use a sharp, sterile needle. Using proper needle length and diameter is critical for administration. If a needle is too large, leakage will ensue — yet, if a needle is too small, it may break or slow the procedure. Never try to put a thick product through a small needle. Also, if the needle is too long it may bend or break, whereas if the needle is too short, product will not be delivered into the proper location.

Needles should not be reused unless boiled between uses. The only exception to



this rule is when a large number of cattle are vaccinated at once, and then care must be taken to make sure the needle stays clean and sharp. In this case, if the same needle is being used on several animals, use a separate, sterile needle for refilling the syringe. Used or dirty needles should never be inserted into the product bottle, as the contents may be contaminated. Additionally, the area to be injected must be clean and dry, as thrusting a needle through wet or dirty skin will take contamination with it, creating risk for an abscess.

If a needle gets dull or dirty, exchange it for a new one. Needles are designed to cut into the skin, not to puncture it. After a needle has been used on 10 or more animals, it starts to dull and develop a burr on the tip, causing more tissue damage and possibly carrying dirt or bacteria underneath the skin. If a needle starts to get a dull or a blunt tip, use a new one. Always discard a needle if it gets bent — this complication means it has been weakened and may break off in the next animal. When working cattle, always have a container close by for disposal of used needles. **HW**

Editor's Note: For additional guidelines and safety protocols, consult the Beef Quality Assurance Manual at bqa.org/Media/BQA/Docs/bqa_manual_final.pdf. See Page 56 of the manual for a detailed description of proper needle sizes for SQ, IM and IV injections based on cattle weight.

