

Veterinary Medicine

Animal Health



Beef Quality Assurance Injection Sites and Techniques

W. Mark Hilton, DVM

School of Veterinary Medicine, Purdue University

**EXPERT
REVIEWED**

Cattlemen have a responsibility to assure that only beef of the highest quality reaches the consumer. The National Cattlemen's Beef Association has maintained a very strong position on beef safety and quality assurance for several years. The public has been assured that the beef at the retail counter is a very safe product for human consumption. In fact, beef produced in the United States is the safest in the world. The safety of the product is the highest priority for all involved in the beef industry. Included in beef safety and quality assurance is injection site lesion reduction.

Injections Can Equal Lesions

As more and more portion-controlled retail cuts of the most expensive beef, primarily steaks, are produced by centralized processors, it has become evident that injections can result in blemishes at the site of injection. These defects must be trimmed and discarded, often condemning two or more steaks to the tubs labeled "Non edible." The costs of trimming can be as much as \$40.00 per head.

Initially, it was thought that feedlots were the primary source of the problem; that the blemishes resulted from injections given when cattle were processed at the time of entry into the feedlot. It is now known that blemishes resulting from injection of calves will persist until slaughter. In fact, the \$40.00 per head loss at slaughter, quoted above resulted from administering black leg vaccine in the rear leg of calves at branding time.

The severity of the lesion varies among products injected intramuscularly. Blackleg bacterin/toxins and related clostridial products have long been known to cause visible injection site reactions if given under the skin. The subcutaneous reactions caused swellings, the size of half a golf ball or larger, that persisted until slaughter. Cattlemen found the unsightly lesions unacceptable and stopped using the subcutaneous route of injection. Intramuscular injections were used as an alternative to subcutaneous injection and the resulting lesions were not found because the carcass was processed into boxed beef. The loss due to trimming was passed through to the cutting rooms of the retail markets, where management had little choice but to pass the cost on to the consumer.



The selection of a vaccine, proper handling of the biologics, and the care and use of syringes and needles has been emphasized when making decisions to vaccinate cattle. The selection of a drug, the dose and duration of treatment, and drug withdrawal times prior to slaughter have been emphasized when discussing drug administration. The choice for route of administration of injections has been left to the discretion of the cattleman.

An option for intramuscular injection generally appeared on the label of most products. Intramuscular injections are easier than subcutaneous injections; thus, intramuscular injections were most frequently selected. It followed that the large muscle masses of the rear quarters provided a good target. The syringe did not have to be carefully guided to hit targets on the rear leg or the large muscles adjacent to the tail head. In addition, the animal did not need to be carefully restrained since it was not necessary to inject a precise location.

Recent research has shown that any vaccine or drug injected intramuscularly may produce a long-lasting lesion. Even products like penicillin, that have been considered almost innocuous when injected intramuscularly, may produce lesions that persist for at least 30 days. The results of the research also indicate that injecting more than 10 ml of any product in a site can produce lesions, as can needles larger than 16 gauge. Another surprising finding is that muscle tissue up to 3 inches from the injection site has increased shear force which decreases product tenderness.

How Concerned Should Cattlemen Be?

Cattlemen should be deeply concerned about injection site lesions and results from the 2000 Beef Quality Assurance audit show that cattlemen have taken the challenge and responded favorably. In 2000, 97.5% of top sirloin butts were free of injection site lesions compared to only 78.7% in 1991. While the progress is admirable, the goal is still to have 100% lesion free product. As a national identification system evolves, cattle will be able to be traced to the herd of origin. Cattle without lesions could garner a premium while those with lesions will be discounted.

Recommendations

The current recommendations to assure beef quality include:

- All products that are labeled for “subcutaneous injection only”, or “subcutaneous or intramuscular injection” should be given subcutaneously, i.e., under the skin.
- All injections should be given in front of the shoulder of the animal.
- The clostridial bacterin/toxoids should not be given more than is necessary. One or two doses, depending on the age of the animal, is sufficient. Under previous management procedures, these products may have been given to individual animals as many as four to five times.
- No more than 10 ml should be injected into a given site. This means that some of the products administered in large volumes will require multiple injection sites.
- Space injections at least 4 inches apart.
- Needles should be no larger than 16 gauge and sharp. Both the larger needles and dull needles traumatize tissue and can produce residual lesions.
- Replace needles after a maximum of ten calves are injected.
- Records of vaccination should be kept and maintained with the cattle as they move through trade channels. Such records would prevent unnecessary repeated injection of vaccines.

Effects on the Cattle Industry

All segments of the industry cow calf producers, veterinarians, back grounders, feed yard operators, etc., must become responsible for beef quality assurance.

Cattlemen will have to provide better restraint to properly administer subcutaneous injections in the neck. The proper and recommended technique for giving injections requires lifting a fold of skin with one hand, forming a "V" or "tent." The needle is inserted through the skin into the space under the "tent." The lifting of the "tent" is necessary to assure that the injection will be subcutaneous. Injecting through the skin with a short needle often invades the underlying muscle. Obviously, good restraint will be essential not only to properly administer the injection, but also for protection of the cattleman handling the syringe. The Academy of Veterinary Consultants recently developed a non-tented skin technique for subcutaneous injection. To view the slides and movie, go to their web site: http://gpvec.unl.edu/AVC/SOP/SQ_Technique.htm.

Record keeping is at the very heart of reducing the number of times various products are administered. As cattle move through trade channels, everyone needs to know the history of the cattle to avoid unneeded injections. The minimal record would include the age of the animal, date of administration, name of product, and injection sites.

It is nearly certain that the costs of trimming injection site lesions from expensive cuts of meat are going to be passed back to the feed yard. The feed yard will either pass the cost of trimming directly back to a known previous owner of the cattle or indirectly, when a previous owner is not known, by discounting future purchases from sources known to supply problem cattle. Alternatively, the costs may be passed back by refusal to purchase feeder cattle from given areas or states. Cow/calf producers have a real need to adopt and practice the recommendations mentioned above to protect a healthy, competitive demand for their calves.

Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may be similar. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

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