

Injection Techniques Locations and Needle Choice
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Nearly 20 years ago, USDA-FSIS, The National Cattlemen's Association, State Livestock Associations and others began efforts to reduce injection site lesions found at slaughter. These injection site lesions were often found in the more expensive cuts of beef. In response Beef Quality Assurance (BQA) meetings and other educational programs were undertaken to inform producers and veterinarians of problems being found at harvest at the retail level and by consumers.

Cattle are injected with a variety of animal health products; vaccines, bacterins, antibiotics, anthelmintics, analgesics and vitamins. Giving injections properly improves animal welfare, product response and beef quality. Injections should be administered in the injection triangle of the neck. The landmarks for the injection triangle are: the lower boundary is the cervical vertebra located in the middle of the neck, the upper boundary is below the nuchal ligament, located 3 inches below the top line, the posterior boundary is in front of the slope of the shoulder. The nuchal ligament lies on top of the animal's neck and supports the head. It should be avoided due to a limited blood supply. Any product injected into it would be poorly absorbed with an increased potential for adverse reactions. A structure to avoid in front of the shoulder is the prescapular lymph node located at point of the shoulder. This lymph node can be bruised by an animal coming into a chute rapidly and hitting the head gate too hard. Bruising of this node can cause significant swelling in the area lameness and a compromise to the immune response. The two main muscles located in the injection triangle and available for intramuscular (IM) injections are triangular in shape. These muscles are wider toward the shoulder and thinner toward the animals head. Besides being wider at the shoulder they are also thicker at the shoulder. This injection triangle leaves a fairly limed site for injections but giving injections into the triangle keeps them out of the more valuable areas of the carcass such as the top butt and round.

When administering injections they should be at least four inches apart. If two injections are to be given in the same side of the neck, one injection needs to be given in the front area of the triangle and the second at least a hand's width behind the first injection.

No more than ten ml of any product should be given at any one injection site when the product is administered IM. A smaller volume may be given to lighter calves. Giving more than ten ml at one site may decrease the products efficacy due to increased inflammation and decreased absorption. Subcutaneous (SQ) injections may not be limited to ten ml per injection site. Some antibiotics are labeled such that more than ten ml can be administered per SQ site. However if not specified on the label limit SQ injections to ten ml per site.

If a product is labeled for both a IM and SQ administration, the SQ route is preferred. When administering a SQ injection a 16 or 18 gauge 1/2 to 5/8 inch needle is the preferred choice. An 18-gauge needle should be used for lighter animals and a 16 gauge for heavier animals. It is important how far the needle goes through the skin in a SQ injection. The cutaneous muscle tightly adheres to the skin and it is easy to inject into this muscle even with a shorter needle. For IM injections a 1 to 1½ inch needle is indicated depending upon the size of the animal. For lighter animals a 1 inch needle would be adequate with a 1½ utilized for heavier animals. Other areas may be occasionally suggested as being available for SQ or IM injections, however only the injection triangle should be utilized and other areas avoided. One noted exception is the injection site for Excede, label directions indicate it is to be placed at the base of the ear. It is important that producers and veterinarians are familiar with product labels and directions for routes of administration.

Only sharp needles should be used for giving injections. Dull or worn needles cause tissue damage to the hide and muscle. At a minimum needles should be changed every time a syringe is filled. When treating an animal, a new sterile needle should be utilized for each animal and for each injection administered when treating that animal. If a needle becomes bent or broken never straighten it and continue to use it. This needle has been weakened and could easily break off in the animal. A broken needle left in an animal is a significant concern for the animal and for the food it produces. Any burred needle should be replaced immediately as it can cause increased tissue damage and pain on injection.

Beef Quality Assurance is the responsibility of every cattle producer and veterinarian. The proper administration of animal health products is one component of a BQA program. By utilizing BQA practices animal welfare and consumer acceptance of beef is enhanced.

In summary injections guidelines are:

1. Give all injections in front of the shoulder in the injection triangle.
2. Multiple injections should be given at least four inches apart.
3. No more than 10 ml should be given when using the IM route. When using the SQ route, follow label instructions for the volume administered at each site.
4. Use the most food friendly route of administration. If a product has a option for a SQ or IM route of administration, the SQ route should e chosen.
5. Change needles often – after every 10 injections. Sooner if the needle becomes damaged or dull.