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G98-1351 Proper Injection Procedures for Cattle

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Proper Injection Procedures for Cattle

This NebGuide describes methods to maximize the effectiveness of injectable medications for cattle, while minimizing potential risks for the animal, the operator and the consumer. The key elements to giving proper injections are knowing why, when, where and how injectable medications should be used.

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Medications are commonly given to cattle as part of regular husbandry practices to improve health, control disease or increase productivity. Medications may be given by injection, by mouth (orally) or through the skin as a pour-on (topically). Injections are commonly given into the muscle (intramuscularly, or IM), under the skin (subcutaneously, or SC) or into the bloodstream (intravenously, or IV).

Medications are administered to cattle by injection for a variety of reasons. For example, vaccines (biologicals) are injected to prevent disease, and antibiotics or anthelmintics may be injected to treat bacterial or parasitic infections, respectively. Other medications may be given by injection for supportive medical care, to relieve pain or to enhance production. Injection may be the best, or the only, route of administration for a particular medication. When there is a choice to inject or use another route of administration, the decision to use injectables may be based on cost, ease of administration, effectiveness, accuracy and reliability or other considerations related to the activity of the product.

Risks Related to Injecting Medicines

Decisions to use injectable medications in cattle should be made after giving careful consideration to the benefits and the risks of the activity. The process of injecting cattle with medications carries certain risks to the animal, the operator and the consumer, thus it is best to seek the advice of a veterinarian.

Injecting medication presents several risks to the animal. Injections with multiple-use needles can spread

some diseases. Anaplasmosis and bovine leukosis are two notable diseases of cattle that are spread through the use of common needles. Dirty, bent, broken or dull needles may lead to injuries or infection at the site of injection. Adequate restraint of cattle prior to injection is necessary to decrease the risk of injury to both the animal and humans.

You as the operator also assume certain risks while administering injectable medications. There is risk of injury to yourself while handling and restraining the animal. You may be injured by the animal, the equipment or by the interface of the two. Operators must be aware of the risk of injury due to accidental self-injection of the medication. Financial loss related to carcass damage following an injection, or due to losses related to medication withholding times and lost opportunities for sales are additional risks.

The risks to the consumer following cattle injections come in the form of injection site blemishes and the possibility that residues of the medication will remain in the final meat product. All intramuscular injections reduce tenderness at the injection site and sometimes the blemish is even less appealing.

The risks associated with giving injections cannot be completely eliminated. However, the risks can be reduced by controlling certain factors (control points) related to the injection process. The operator can both minimize the risks and maximize the benefits of injectable cattle medications by understanding the control points in the injection process.

Control Points for Safe, Effective Cattle Injections

When (and when not) to give injections

The decision to administer injectable medications should be based on medically sound principles. Seek the advice of a veterinarian whenever there is doubt about the appropriateness of using injectable medications. The expression that "timing is everything" is appropriate when it comes to injecting cattle medications. Consider the effect of withholding times on marketing decisions before administering the product. The effectiveness of some injectable medicines and biologicals depend on appropriate timing of administration to the life-stage of the animal.

Injection records are essential to avoid unnecessary repeat treatments that increase costs, increase the possibility of injection lesions and increase the risk of tissue residues. Treatment records simplify troubleshooting when treatment failure occurs, and recorded withdrawal dates make it possible to avoid product residue problems. *Figure 1* shows a health record for recording health procedures and related information for beef calves.

Figure 1. Cattle Health Record

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Where to give injections

The route that injectable medications are given influences how well the product works and the fate of the product in the animal's system. The label on injectable products describes the appropriate routes of administration. Do not deviate from the label recommendations without the advice of a veterinarian. It is unlawful to administer any injectable product in any dosage or by any means other than that stated on the label unless directed to do so by a veterinarian.

Some injectable products are labeled for intramuscular (IM) or subcutaneous (SC) use. Use the subcutaneous route of injection whenever that option is available to reduce the risk of injection site

lesions within the carcass. Intramuscular injections should given in the muscles of the neck to avoid blemishes in more valuable carcass cuts, regardless of the age of the animal. Do not give intramuscular injections in the rear leg or over the rump. Subcutaneous injections should be administered in front of the shoulder. *Figure 2* shows appropriate injection sites for cattle of all ages.

How to give injections

Proper injection methods require that the animal be appropriately restrained to avoid injury to either the animal or the operator. What defines appropriate restraint may depend on the size of the animal, the disposition of the animal and the type of injection. Appropriate restraint means that the animal is held well enough that the operator is able to safely approach and administer the medication, and that the animal is not injured by the restraint or the injection. Anticipate how the animal could respond to an injection and assure yourself that the animal's reaction to the injection will not lead to injury to yourself or to others. Do not place yourself at needless risk of injury for the sake of an injection. If you cannot give the medication safely, don't give it.

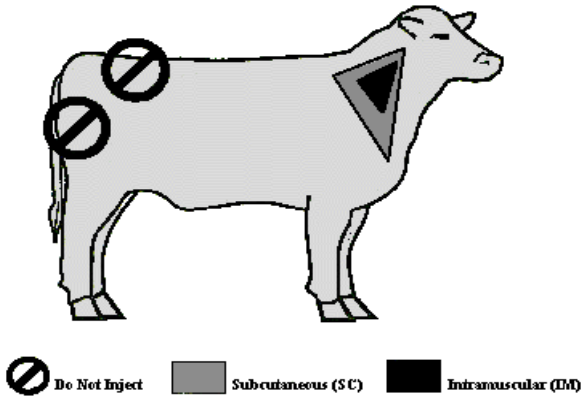

Figure 2. roper injection sites for subcutaneous or intramuscular injections in cattle of all ages.

The volume of drug administered at an injection site depends not only on the dosage of the medication but also on the route of administration and the maximum volume recommended per site. Always follow the label recommendations for dosage and volume per injection site unless directed to do otherwise by your veterinarian. Do not exceed 10 cc (cubic centimeter or milliliters) at any intramuscular injection site.

Injection needles are available in varying lengths and diameters. The diameter of a needle is measured by its gauge. The larger the gauge, the smaller the diameter of the needle. As a general rule use the largest gauge-size needle (thinnest) that the medication will pass through and that will not bend or break during the injection. Typically 16- or 18-gauge needles that are 1 1/2 inches long are used for intramuscular injections in cattle weighing over 500 pounds. Injection needles suitable for calves under 500 pounds are typically 18- or 20-gauge and 1 inch long. Needles used for subcutaneous injection should be 1 inch or less in length for any age animal.

Use only needles with aluminum hubs because they are less likely to break during injections. Do not use needles with plastic hubs. Needles that break off and remain in the animal must be removed; surgery is often required. Contact your veterinarian if assistance is needed to remove a broken needle. Do not let an animal with a broken needle enter the food chain. To prevent needle breakage use proper animal restraint and do not try to straighten or reuse bent needles.

When administering an injection, clean, sharp needles should be rapidly placed into the site, the dose administered, and the needle quickly removed. Some medications must not be placed directly into the bloodstream, and it may be necessary to draw back on the syringe and observe for blood before beginning an intramuscular injection. Subcutaneous injections should be given at the base of a "tented" fold of loose skin lifted away from the animal with your free hand. This "tenting method" minimizes the risk of injecting into muscle.

Sanitation and product quality

The risk of infected injection sites can be reduced by maintaining clean working conditions and

equipment. The surfaces of tables and restraint equipment should be kept free of dust, moisture and manure. After use, syringes can be disinfected by disassembling and washing with hot soapy water, rinsing with alcohol and drying before reassembly. Soaps, alcohol and other disinfectants will cause live or modified-live vaccines to become inactive. Syringes used for live or modified-live vaccines should be sterilized using either moist or dry heat. If it is necessary to rinse out a syringe during use, then draw sterile saline or sterile water into and out of the syringe several times.

The effectiveness of the injectable product depends on how carefully the product is handled after purchase. When medication is not being used it should be stored in a clean, closed location at an appropriate storage temperature. Keep medications labeled and discard out-of-date items. Contamination can be avoided during use if the rubber bottle stopper is wiped clean before inserting the needle. Special care is required to avoid contamination of the product in multiple dose vials; insert a new clean needle into the rubber stopper and use that as a transfer needle to fill syringes rather than repeatedly inserting needles that have been injected into the animal. Assure that the product remains at the appropriate temperature during use. Protect modified-live vaccines from ultraviolet light (including direct sunlight), heat and freezing. Keep vaccines on ice packs within coolers until used. Protect all products from extreme heat or freezing. A light bulb or other heat source can be wired into a cooler to provide a warm chute-side container for medication during cold weather.

Needles are often used in more than one animal to save time and money. This practice is most common when multiple dose syringes are used. When needles are used in more than one animal the risk of injection site blemishes increases, as does the risk of transmitting diseases. When more than one animal will receive an injection from the same needle, the decision to change needles should be based on needle contamination, damage or dullness. No more than 10 animals should be injected with the same needle. When multiple animals are being processed it may be useful to keep syringes with "backup" doses drawn up to avoid the temptation to use a contaminated, bent or dull needle. This gives the operator time to change needles or redraw an automatic syringe.

Conclusion

The decision to administer injectable medications should be made after comparing the benefits and the risks of doing so. Your veterinarian is the best source of advice on maximizing the benefits of treatment and reducing the risk of problems. Remember:

- All intramuscular injections reduce meat tenderness at the injection site;
- Give intramuscular injections only in the neck muscles. Never give an intramuscular injection in the rear leg or rump regardless of the animal's age or use;
- Use only injectable products that meet Beef Quality Assurance guidelines;
- Use subcutaneous products whenever possible and avoid injectable medications that are irritating to tissues.

When used correctly, medications improve animal health and well-being, increase profitability and provide the consumer with a higher quality food product.

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