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8-1-1996

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Recommended Citation
Epperson, Bill and Bruns, Kelly W., "Injection Site Blemishes— Questions and Answers for Beef Producers" (1996). *Extension Extra*. Paper 379.
http://openprairie.sdstate.edu/extension_extra/379

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SDSU

Extension Extra

ExEx 11003
August 1996
Food Quality Assurance

COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / SOUTH DAKOTA STATE UNIVERSITY / USDA

Injection Site Blemishes— Questions and Answers for Beef Producers

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Q: What is meant by "injection site blemishes"? I've given lots of shots and never seen a problem.

A: The term "injection site blemishes" or "injection site lesions" can be used to describe any abnormality resulting from a previous injection. When an injection is given into muscle, the area around the needle causes tissue injury. In addition, the product injected adds to the injury area. Most commonly, areas around the injection sites heal without obvious damage apparent to the producer. When the muscle tissue heals, however, it leaves a "scar" or "woody callus" composed of tough connective tissue. This is analogous to a skin cut or scratch which often heals with a scar.

Most generally, the cattle producer will not observe any outward abnormality to indicate that an injection site lesion occurred. Only very rarely will some external swellings appear.

Q: Are injection site blemishes really still a problem?

A: Yes, but there has been tremendous improvement over the last 5 years. The incidence of injection site scars in the top sirloin declined from over 22% in 1991 to about 10% today, so there has been significant progress. However, it is possible to abolish the incidence of injection site blemishes.

Q. What is the real economic impact of injection site blemishes to the industry?

A: The 1995 National Beef Quality Audit reported that losses from injection site lesions of the top sirloin butt, bottom round, eye of the round, and inside round amounted to $7.05 per head slaughtered. This $7.05 included direct losses from excessive trim, labor to trim, and loss from abscess formation. With an estimated 28.4 million cattle slaughtered in 1995, the total U.S. beef industry loss due to injection site lesions was over $200 million. This figure does not take into account product that has decreased tenderness due to injection site blemishes that may contribute to decreased consumer perception of the beef, so the actual loss could be much greater.

Purveyors, retailers, and restaurateurs still rank injection site lesions as one of their top 10 concerns.

Q: Do these injection site blemishes pose any threat to people eating the meat? Is there a food safety concern?

A: No. There is no food safety concern with most injection site lesions. If we use the correct animal health products and observe the proper withdrawal time, there are not antimicrobial residue concerns. Injection site blemishes are a concern to the beef

industry because they can produce changes in the tenderness of the meat that may result in a less than optimal eating experience for the consumer. Large, fluid-filled abscesses may pose a food safety hazard, but these are rare and are identified and removed at processing.

Q: How do producers decrease the losses from injection site blemishes?

A: 1) If you must inject a product, choose a product that can be given subcutaneously (Sub Q). Using correct Sub Q injection technique will avoid all contact with muscle.

2) If using a product that is not labeled for Sub Q use but is labeled for intramuscular (IM) injection, give the injection in the muscles of the neck. Do not inject into the hind legs, hip, back, or shoulder. Use of the neck muscles for 1M injections will avoid producing injection site blemishes in the valuable cuts of meat from the top butt and round areas. In general, place all injections in front of the shoulder.

3) If possible, use products that have been shown to have lower tissue reaction. There are product differences in this regard, and information is coming forth. Ask your veterinarian about this.

4) Properly restrain the animal. It is very difficult to give a proper injection without good restraint and adequate assistance. Good restraint also increases safety to the animal and the people handling it.

5) Use a clean, sharp needle. Worn or dull needles increase trauma. Replace needles at regular intervals when working cattle, perhaps every 10th injection (or more frequently).

6) Use the proper size needle. (The following are some general recommendations.) Consult your veterinarian. The selection of needle size may depend on the product you are using.

Animal	Needle gauge	M injection	Sub Q injection
Mature animal or larger calf	16 or 18	1 1/2"	less than 1"
Small calf	Usually 18	1"	less than 1"

7) Maintain sanitation. Provide a clean table for a workspace, to place syringes, needles, medicine, etc. Choose a skin site for injection that is clean, to avoid carrying bacteria into the injection site.

8) Follow the directions for the product you are using —read the label or ask your veterinarian. Some products have specific directions or warnings. Avoid injecting an excessive volume of product at any one injection site—usually the product label will address this. As a general rule, avoid injecting more than 10 cc (ml) at any intramuscular site, and no more than 20 cc (ml) at any subcutaneous site.

9) Establish a good herd health program, including appropriate vaccinations. This will help prevent illness and losses later. Keep in mind that: (a) "more" is not necessarily better, even when it comes to vaccines, and (b) even an effective product can be ineffective or even damaging if applied improperly. Work with your veterinarian to evaluate your program and make changes as needed.

Q: Because I sell my calves as feeders, I do not need to worry about injection site lesions since most of them result from feedlot vaccines and treatments. Right?

A: Wrong. Studies have shown that vaccinations and antibiotic treatments given to calves at branding (spring) produced injection site lesions that were present when calves were slaughtered – nearly one year later. In fact, the incidence of injection site blemishes and the amount of trim loss associated with injection site blemishes were as much or greater for calves vaccinated at branding than calves not vaccinated until weaning (fall).

Q: I don't see what harm that little needle can do. Is it really so bad?

A: You be the judge— A recent study of calves injected at weaning has indicated that IM injection of nearly any product (even sterile water) into the muscles of the top sirloin butt and outside round (rump region) can produce nearly twice as much unacceptably tough meat from that area than from the opposite (uninjected) rump. The injection of nearly any of the seven

products tested resulted in more than three visibly affected steaks per area injected. Even in those steaks with no visible blemishes, the meat was tougher than the meat from the other, uninjected, rump.

This study showed that the overall tenderness of meat from injected areas was decreased. The study utilized calves that had no previous injections. Calves were injected with approved products (or with a “control” of sterile water) one time, at weaning, and followed to slaughter, an average of 178 days later.

Q: What is the long-term solution that will eliminate injection site lesions in beef?

A: Elimination of IM injections provides the best long-term solution. Producers need to move toward exclusive use of non-injected products (pour-ons, oral products) or, if injected, products injected only subcutaneously. If IM injections must be made, they should be given in the neck region.

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ExEx 11003- PDF by CES February 1990; updated April 2002.