Beef Quality Assurance in Feedlots

Robert A. Smith, DVM, MS[a], Daniel U. Thomson, DVM, PhD[b,*], Tiffany L. Lee, DVM, MSc, MS[b]

KEYWORDS

• Feedlot • BQA • Cattle handling • Drug use • Injection sites

KEY POINTS

- The Beef Quality Assurance (BQA) program was written by beef producers and veterinarians for beef producers and veterinarians.
- The program has continued to evolve from its starting point of antibiotic residue avoidance to include animal handling, cattle comfort, food safety, and much more.
- Providing guidance to producers and veterinarians on best management practices allows the beef industry to be transparent and open to the beef consumer about the practices used on cattle.
- Veterinarians are key components to helping producers implement BQA in their beef operations.

INTRODUCTION

Veterinarians and cattlemen have long recognized the need to properly care for cattle. Historically, beef production practices fell under the "animal husbandry" umbrella and focused primarily on feeding, breeding, and disease management. As time progressed, consumers became more interested in specific beef production practices, ranging from antimicrobial use, growth enhancement, food-borne illness, and cattle care and well-being. This, as well as advancing beef production technologies and knowledge, guided significant changes in beef production practices over the past 30 years.

In the early 1980s, the beef cattle industry began exploring ways to assure consumers that beef is a safe product. One of the first steps was to establish a relationship between the US Department of Agriculture Food Safety Inspection Service and the beef industry to develop the Pre-Harvest Beef Safety Production Program. This was key to the later development of the Beef Quality Assurance (BQA) program.[1]

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[a] CattleTec Veterinary Services, PLLC, Veterinary Research and Consulting Services, LLC, 3404 Live Oak Lane, Stillwater, OK 74075, USA; [b] Beef Cattle Institute, Kansas State University, 101 Trotter Hall, Manhattan, KS 66506, USA
* Corresponding author.
E-mail address: dthomson@vet.k-state.edu

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Over the next few decades, the beef industry adopted self-regulating programs without additional governmental regulation to provide greater assurances to consumers that best production practices were animal-friendly and that beef products were of the highest quality. Various BQA programs were expanded to include truckers, auction markets, cow-calf producers, stocker operators, feedlots, packers, and dairies. Education of stakeholders in the production chain was the cornerstone, with educational materials developed in cooperation with the National Cattlemen's Beef Association, state cattlemen's associations, beef councils, university extension, nutritionists, animal behaviorists, and veterinarians.

More recently, the beef industry has developed the framework for individuals and businesses involved in beef production to become BQA certified.[2] At the same time, assessment guides were developed for cow-calf, stocker, and feedlot owners and/or managers to assess compliance with BQA principles.[3] Third-party audits are performed to ensure that beef production practices are followed.

Throughout its history, the goal of BQA has been simple: improve the quality of beef to provide consumers with what they want. When accomplished, this improves consumer demand, optimizes the well-being of cattle, and increases the likelihood of profit for beef producers.

INJECTION-SITE LESIONS

Injectable animal health products for beef cattle are more commonly used than those administered orally or topically. Until the early 1990s, the intramuscular (IM) route of administration was more common than the subcutaneous (SC) route. Research has shown that any animal health product administered IM can cause an injection-site lesion in muscle tissue. The lesions are also called injection-site scars, blemishes, or defects. A Colorado State University study demonstrated that administration of clostridial vaccine or an antibiotic at branding (50 days of age) or weaning (200 days of age) resulted in injection-site lesions that persisted until harvest at about 14 months of age.[4]

Another study evaluated the incidence, severity, amount of tissue affected, and effect on histology when the top sirloin butt (biceps femoris and gluteus medius muscles) and outside round (biceps femoris muscle) were injected IM with various animal health products. Weaning-age beef calves were randomly injected with10 mL sterile saline, 2 mL modified-live virus vaccine (Bovi-Shield 4), 5 mL inactivated virus vaccine with oil adjuvant (Vira Shield 5), 5 mL 7-way clostridial bacterin-toxoid (Clostridial 7-way), 5 mL vitamin ADE (Vital E-A+D), 8.8 mL (average) aqueous antibiotic (Naxcel), 10 mL tylosin (Tylosin Injection), or10 mL long-acting oxytetracycline (Liquamycin LA-200). The contralateral noninjected subprimals served as controls. Products were administered IM using a 16 gauge, one and one-half inch (38.1 mm) needle. Calves were fed in a commercial feedlot and harvested in a commercial packing plant after 178 days on feed.[5,6]

Visible injection-site lesions were observed in 7.1% to 100% in both the top sirloin butts (average incidence 55.8%) and outside rounds (average incidence 54.5%), depending on the product injected. Subprimals with visible lesions had higher ($P<.001$) mean shear force values (Warner-Bratzler shear device) and more variation in tenderness than noninjected controls. Subprimals that were injected but had no visible lesions had higher ($P<.001$) shear force values and more ($P<.01$) variation in tenderness than control primal cuts. The investigators concluded that IM administration of all compounds resulted in unacceptable muscle tissue quality, specifically a decrease in tenderness.[5,6]