

Antibiotic Injection Practices on U.S. Dairy Operations

Injection site lesions are a quality problem for the dairy industry, not a public health threat. Those industry losses could be prevented by using subcutaneous (under the skin) routes for injections where possible and moving injection sites for vaccinations and antibiotics from the upper hip and leg to other sites.

While the primary value of dairy cows is related to their ability to produce high volumes of quality milk, 30 percent of U.S. dairy cows are culled for slaughter each year (USDA-NASS, Cattle Slaughter Report.) Culled dairy cows account for about 25 percent of U.S. non-fed beef available for consumption in the U.S.¹ and represent an important source of income for dairy producers. Up to \$40 additional profit per cull dairy cow is possible through use of management practices to increase carcass quality and reduce condemned carcasses and nonambulatory cows.¹

The National Non-fed Beef Quality Audit¹ estimated the incidence of injection site lesions in non-fed cattle was 29 percent in rounds and at least 14 percent in top sirloin butts. The industry loss estimate for injection site lesions is \$4.54 for each non-fed animal slaughtered when including effects of muscle toughening after injections.²

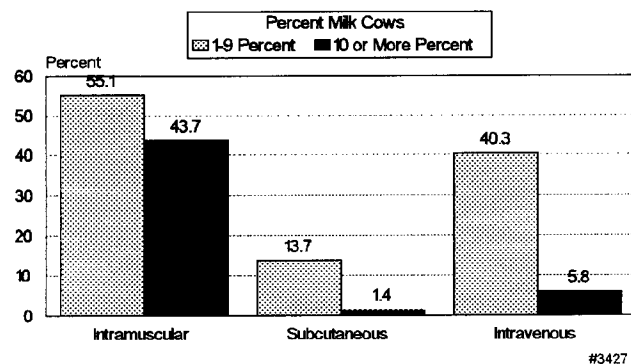
The USDA's National Animal Health Monitoring System (NAHMS) Dairy '96 Study addressed antibiotic injections in herds with 30 or more dairy

cows by surveying randomly selected operations that represented 79 percent of U.S. milk cows. Data were collected from 1,219 dairy producers from 20 states³ who voluntarily participated in the program and responded to an administered questionnaire.

In the 12 months prior to the Dairy '96 study, 93.5 and 43 percent of dairy operations gave at least one antibiotic injection to at least 1 and 10 percent of milk cows *during lactation*, respectively. Also, 49 percent gave at least one antibiotic injection to at least 1 percent of milk cows *while dry*. These values indicate dairy producers need to safeguard against antibiotic residues and losses in carcass value that result from injection sites.

Of 96.1 percent of dairy operations that gave antibiotic injections to at least 1 percent of *lactating or dry cows*, 43.7 percent gave intramuscular antibiotic injections to at least 10 percent of cows, compared to only 1.4 percent for subcutaneous antibiotic injections and 5.8 percent for intravenous antibiotic injections (Figure 1). Preference for

Figure 1
Percent of Operations by Percent of Cows that Received at Least One Antibiotic Injection in the Previous 12 Months by Route of Administration



1 G.C. Smith, et al. (ed.) 1994. Final Report of the National Non-fed Beef Quality Audit, Colorado State University. Fort Collins, CO.

2 M.H. George, et al. 1997. Injection-site losses in non-fed beef from cull/surplus cows and bulls. Update to National Cattlemen's Beef Association, Beef Quality Task Force.

3 Participating states: California, Florida, Idaho, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New Mexico, New York, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Washington, and Wisconsin.

intramuscular antibiotic injections was most likely due both to labelling and ease of administration.

The most common sites of intramuscular antibiotic injections were the upper hip and upper hind leg rather than lower value sites such as the neck (Figure 2). Common use of the upper hip and upper hind leg is likely due to typical cow handling facilities which provide easier access to the rear rather than the side of the cow. These findings differ from 1994 NAHMS information from large U.S. feedlots. NAHMS 1994 Cattle on Feed Evaluation results indicated that of cattle on feed operations with a one-time capacity of 1,000 or more cattle that gave at least 1 percent of cattle intramuscular antibiotics:

- 23 percent gave some cattle intramuscular antibiotics in sites comparable to the upper hip.
- 16.5 percent gave some cattle intramuscular antibiotics in sites comparable to the upper and mid leg.
- 60.0 percent gave some cattle intramuscular antibiotics in the neck.

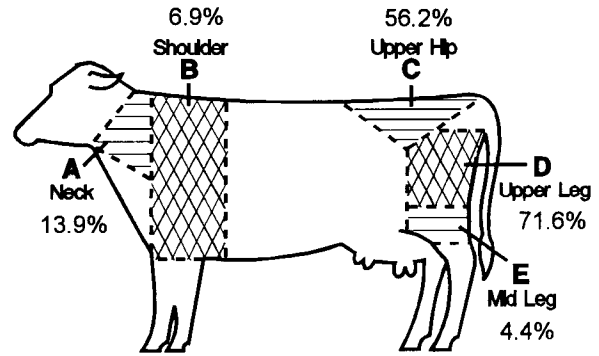
The majority of antibiotic injections to dairy cows are given by operation personnel, not veterinarians. While 73.1 percent of dairy operations that gave antibiotic injections had a veterinarian give at least 1 percent of injections, only 22.7 percent of operations that gave these injections had the veterinarian give at least 10 percent of injections. Therefore, primary educational efforts should be focused at herd managers and their employees.

To avoid antibiotic residue problems in milk and meat, dairy managers used various methods of recording antibiotic injections. Overall, 71.2 percent dairy operations routinely recorded antibiotic treatments (88.8 percent of herds with at least 200 cows). For operations that routinely recorded treatments, the type of record used varied markedly by herd size (Figure 3). Eighty-eight percent of dairy operations used a method of identifying cows that had been given antibiotics to keep their milk out of the bulk tank for shipping. Again, methods differed markedly by herd size (Figure 4).

Large numbers of dairy cattle are injected with antibiotics, often in anatomical locations which have been shown to reduce meat quality. These injections are generally administered by dairy herd managers and employees for whom educational efforts are needed to increase awareness and modify current practices to augment the quality of dairy products.

Figure 2

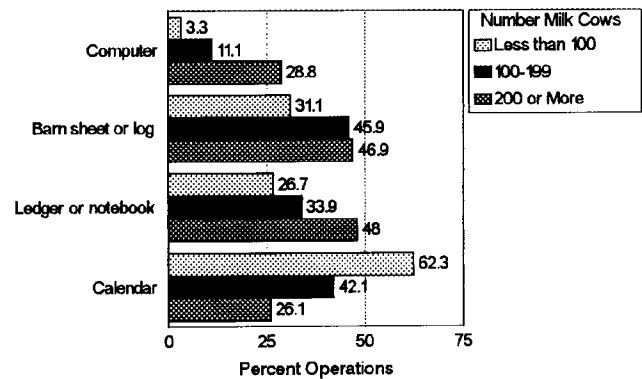
Percent of U.S. Dairy Operations* that Gave Some Cows Intramuscular Antibiotic by Injection Site Used



* For U.S. dairy operations that gave at least 1 percent of cows an intramuscular antibiotic.

Figure 3

Percent Operations* by Antibiotic Record Type and Herd Size

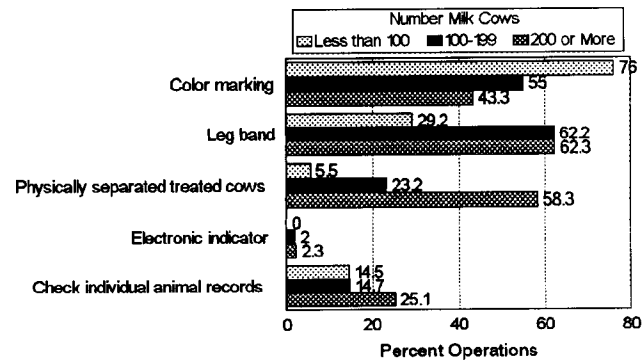


*For operations that routinely recorded antibiotic treatment.

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Figure 4

Percent Operations* by Cow Identification Method and Herd Size



*For operations that used a method to identify cows that had been given antibiotics.

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