

Preconditioning Programs in the U.S.

Duane Miksch, D.V.M.
Extension Veterinarian
University of Kentucky
Princeton, KY

Preconditioning is far from static in the United States. After 23 years of working with the concept, there are still more questions than answers. Preconditioning is a theoretically sound concept. Testimonials of the benefits abound, especially in the Northern Great Plains and in the Southeast. Nevertheless, many of the claims for preconditioning are not substantiated by controlled research data.

History of Preconditioning

"Preconditioning" for feeder calves entered the language of veterinarians and animal scientists in the mid-1960's. Dr. John Herrick, as Iowa State University Extension Veterinarian, presented a paper entitled "Preconditioning" at the annual meeting of the National Livestock Feeders Association in December 1965. The U.S. Livestock Sanitary Association (now U.S. Animal Health Association) presented resolutions related to preconditioning of feedlot cattle in 1966. State and National educational programs were launched the same year.

Programs to certify feeder calves as preconditioned were soon activated in a few states. The South Dakota Veterinary Medical Association plan and the Washington Certified Feeders Preconditioning Program are two early examples. Neither program lasted very long. (South Dakota started a new program in 1982 which certified 70,000 calves in 1987 and sold 6,000 in 6 special CPH sales.) National seminars on preconditioning were held in successive years. The first was at Oklahoma State University in September, 1967, and the second at the University of Wyoming in June, 1968. Animal scientists, veterinarians, cow-calf operators, and cattle feeders presented papers and participated in discussions on health problems associated with the transition of calves from cow-side to feedlot.

The Iowa Beef Preconditioning program, initiated by Dr. Herrick and sponsored by Iowa State University Cooperative Extension Service, began certifying feeder calves in 1967. The Iowa Veterinary Medical Association later assumed sponsorship of the program in Iowa. This is still the largest active preconditioning program for feeder calves.

The American Association of Bovine Practitioners (AABP) endorsed and actively promoted a specific preconditioning program. They adopted the title, "Certified Preconditioned for Health" (CPH). Their program was

distinguished by metal ear tags with a national numbering system and by three optional plans indicated by a black, red, or blue bangle attached to each ear tag. AABP did not succeed with that plan but continued to provide guidelines for standardization of preconditioning programs.

Manufacturers of cattle feeds, vaccines, anthelmintics, insecticides, and other products picked up on the concept of preconditioning as it related to demand for their products. Programs varied considerably, and preconditioning came to have different meanings to different interests. Too often it meant the burden of multiple stresses placed on a calf immediately before it arrived at the feedlot. Sometimes it meant a certain brand of feed was offered the calf during transition from cow-side to feedlot. Feedlot operators were unable to objectively evaluate any superiority of a preconditioned calf. Trials which compared feedlot health and performance of preconditioned vs. nonpreconditioned calves had equivocal results.

Federal funds were appropriated for a National Shipping Fever Research Project in FY 1975. Primary research sites were designated at El Reno, Oklahoma (near winter grazing); Bushland, Texas (near the High Plains feedlots) and College Station, Texas (where the transportation and marketing group was located). Subsequently, a fourth "key" research site was established at the University of Tennessee, Knoxville. The National Animal Disease Center at Ames, Iowa, provided complementary studies of the etiology and immunology of the Bovine Respiratory Disease Complex (BRDC). Tennessee, Texas and Oklahoma diagnostic laboratories accepted responsibilities associated with post-mortem examination of experimental subjects. Five different veterinary colleges helped by identifying and characterizing the pathogens found in sick animals. Agricultural Experiment Stations, Cooperative Extension Service, livestock associations, Livestock Conservation, Inc., Texas Cattle Feeders, and numerous individuals participated in the project.

A survey of Extension Beef Cattle Specialists in 1979 identified ten states with active programs to "certify" the treatment of feeder calves. There were an estimated 500,000 calves certified in 1979, 90% of which were Iowa calves.

The AABP and the National Cattlemen's Association (NCA), in 1979, jointly developed a management guideline on "Protecting Against Respiratory Disease in Calves"

which essentially integrates preconditioning with health management of the cow herd. The most recent update in AABP's guidelines was in 1982, when they recommended not requiring vaccination for *Pasteurella* and recommended vaccinating for *Hemophilus somnus*. The Texas Agricultural Experiment Station and Texas A & M University, College of Veterinary Medicine, hosted a North American Symposium on Bovine Respiratory Disease at Amarillo, Texas, in September, 1983.

Current Preconditioning Programs

All current U.S. preconditioning programs except the Iowa program were begun during the past 10 years. The Iowa program has not specifically required preweaning. The Iowa Cattlemen's Association now sanctions approximately 14 special preconditioned sales each year. Calves in those sales must be preweaned thirty days to qualify, as certified by the veterinarian and owner.

Preconditioning programs are active in 13 states from North Dakota to Georgia. The programs are now fairly uniform and follow guidelines established by the AABP. The state veterinary medical association has taken the lead in some states and in others has given only nominal support. Cattlemen's associations actively support preconditioning in most of the states. Extension Veterinarians are actively involved in most of the programs.

Not all participating states have special sales for only preconditioned calves. In the Southeast, where herds are smaller, a greater proportion of preconditioned calves is sold in special sales. A premium price of \$4-\$6 per hundred pounds has been demonstrated for calves sold in CPH sales compared to calves sold in regular weekly auctions. It has not been possible to determine, however, how much of this is due to preconditioning and how much is due to grading and grouping.

Tags and certificates, in some states, are supplied by the Veterinary Medical Association, in some by the State Veterinarian and in a few by the Cooperative Extension Service. Some programs require most processing be done by a veterinarian, whereas others require only an established veterinarian-client relationship.

All states with CPH programs, except Missouri, require prior ownership of calves for 60 days. States are about equally divided between a 21-day and a 30-day minimum interval required between processing and weaning, to selling. All states require dehorning, castrating and grub/lice treatment; most require deworming.

IBR-PI₃ vaccination is required by all states. None specify type of vaccine or route of administration. All require a clostridial bacterin. BVD vaccination is required in about two-thirds of the states. *Hemophilus somnus* has been added by several states since their programs first began, but a few have already dropped the requirement or expect

to soon. Reasons given are lack of efficacy for respiratory infection and evidence of immunosuppression. Pasteurellosis vaccination is not now recommended as mandatory by AABP and has been made optional in all state programs, mostly as a result of research data published by Drs. Markham and Wilkie (1980) at the Ontario Veterinary College, Guelph. Some states are considering requiring a modified-live pasteurella vaccine.

Mississippi began an aggressive pre-marketing processing program for feeder calves in 1984. They emphasize spreading the stress-load by early dehorning and castrating, plus pre-weaning vaccination and parasite control. However, they do not require weaning or adaptation to a grain diet, considered by many to be the most important aspects of preconditioning.

The Texas Veterinary Medical Association (TVMA), in 1987, appointed a committee to critically evaluate preconditioning and preconditioning programs. East Texas is mostly cow-calf oriented and typical of much of the Southeastern U.S. West Texas has larger cow herds and has a large share of the typical High Plains feedlots. The TVMA, the Texas Agricultural Experiment Station and the Texas Agricultural Extension Service are conducting a study with 400 calves to determine if there are advantages to preconditioning. They have given their proposed program the name, Texas Optimally Processed (TOP) Calf Program. They are studying a complete preconditioning program with an option of feeding the calves for 30 days post-weaning, or limit-creep feeding for the 30 days prior to weaning and selling at weaning.

Benefits of Preconditioning

Some positive results that encourage continued interest in preconditioning programs include:

1. Feeding demonstrations have proven that gains of 45-75 pounds during the first 30 days post-weaning can be expected. This has also encouraged extended ownership of stocker calves and development of replacement heifers by producers accustomed to selling all of their calves at weaning.
2. Preconditioning has complemented and enhanced graded-grouped feeder calf sales, which are necessary to acquiring equitable prices for producers of very small groups of calves.
3. Producers are stimulated to increase their contacts with professionals: extension specialists and/or agent, veterinarian, marketing agent, feed and drug company representatives, regulatory personnel and cattlemen's associations.
4. Participation in preconditioning programs results in adopting improved nutrition and health management practices for breeding herds producing the calves.

5. Regional farmer-feeders are offered healthier, more uniform feeder calves. There is an adequate demand for preconditioned calves relatively close to their origin without depending on sales to large High-Plains feedlots.
6. Morbidity and mortality of preconditioned calves have surely decreased, especially when extraordinary stress and exposure are encountered in transit or on arrival at the feedlot.
7. A multitude of educational opportunities result from the spin-off.

Criticisms of Preconditioning

Preconditioning is not without its critics. The most often quoted has been Dr. Andy Cole, a research animal scientist with USDA in Bushland, Texas, who was closely involved with the National Shipping Fever Research Project. His assessment of "the available data from controlled research" was that "there is no economic advantage from the added expense and time involved in preconditioning." Dr. Cole (1984) determined from his review of data that preconditioning programs result in:

- 1) no effect on farm weight gains compared to calves left with their dams;
- 2) no effect on market-transit shrink;
- 3) no effect on feedlot performance if calves are fed longer than 100 days.
- 4) a reduction in feedlot morbidity of about 6 percentage units;
- 5) a reduction in feedlot mortality of about 0.7 percentage units with an increase in mortality at the farm of origin.

Dr. Cole's judgement prevails among cattle feeders and feedlot veterinarians in the High Plains. Similar evaluations were made by Dr. Harlan Ritchie, Michigan State University animal scientist (1987) and Dr. Tim Jordan, Canyon, Texas feedlot veterinarian (1987). Controlled research data support the negative evaluations, in contrast to surveys of producers, which support economic advantages for preconditioning (Table 1).

Table 1. A comparison of survey data vs controlled data regarding preconditioning.

	Survey	Controlled
Farm gains	+22 to 66 lb	NE*
Shrink	-5%	NE
Feedlot gains	+???	NE
Feedlot F/G	-???	NE
Morbidity	-20 to 30%	-6%
Mortality, FL	-0 to 1.7%	-0.7%
Mortality, total	-	-0.6%
Bonus price	\$3 to \$7/cwt	Uniformity

Cole, 1984 *NE = no effect

The strongest criticism of preconditioning has been the amount of grain fed, resulting in overfleshing of calves. Dell King (1987), a reputable Kentucky order buyer and ardent supporter of preconditioning, told bovine practitioners at the 1986 AABP Convention, "Stop overfeeding the calves. Shorten the feeding time and go more to a growing ration. In my opinion, this is the largest single problem today. This affects health and performance and will eliminate preconditioning if not stopped!"

Probably, most of the \$4-\$6/cwt premium realized for "preconditioned" calves in the Southeast could properly be attributed to method of marketing. "Farm fresh" calves from small herds are assembled and packaged to attractively fill orders for truckloads (Miksch, 1984). Tennessee studies indicate that calf prices can be increased \$2-\$5/cwt simply by sorting them into uniform groups. It is generally agreed that calves that have healed following earlier castrating and dehorning bring an additional bonus.

Limit-Creep Feeding—An Emerging Alternative?

Adaptation of calves to grain is considered to be an important part of preconditioning. Programs that do not include grain feeding do not meet the criteria for preconditioning. Conversely, feeding too much grain has prompted the strongest criticisms of preconditioning from advocates and adversaries alike. Most Kentucky calves cannot gain two pounds per day for very many days without getting too fat to suit feedlot buyers. Acidotic calves have sometimes been put in with healthy calves at the CPH sales.

Calves can be adapted to grain by creep feeding prior to weaning. Free-choice creep, however, tends to get calves fat and requires 7 to 12 pounds of grain for each pound of calf added.

Florida, Kansas and Oklahoma research indicate that limit-creep feeding may be a practical alternative to free-choice creep or post-weaning feeding. Dr. Keith Lushby, Oklahoma State University, has conducted some of the limit-creep research. He is presenting his data and reviewing available data from other limit-creep feeding research as part of this symposium.

The proposed Texas Optimally Processed (TOP) Calf program offers limit-creep feeding as an alternative to post-weaning feeding. Limit-creep feeding may be a desirable way to further distribute the stress load on calves. It may also allow for calves to be adapted to grain without resulting in acidosis or getting calves too fat.

Conclusions

Calves, especially those from the Southeast, are normally subjected to a phenomenal stress-load during the transition from cow-side to feedlot. This results in a higher incidence of Bovine Respiratory Disease, with resulting high losses.

Thirteen states now have some kind of official preconditioning program, and Texas is evaluating preconditioning to determine whether or not to adopt a program.

Results of controlled experiments and producer surveys of preconditioning are very contradictory. Surveys report improved feedlot performance in preconditioned calves, but there are no control groups for comparison. Surveys tend to compare preconditioned calves that did not pass through a stressing market-transit system to "control" calves that did.

Dr. Andy Cole addressing the North American Symposium on Bovine Respiratory Disease (Cole, 1984) concluded, "The concept of preconditioning is theoretically sound. However, it is apparent from the controlled data available that modification and improvement of the preconditioning program is needed before it is ready to be used by the majority of the U.S. beef cattle industry." Dr. Tim Jordan, High Plains feedlot veterinarian, in a paper presented at the 19th annual meeting of AABP (Jordan 1987), analyzed the state of preconditioning, saying, "The theory...is based upon sound animal husbandry and veterinary medical criteria...Preconditioning of calves does offer an increase in economic return versus non-preconditioned calves...The seller of those calves could only expect a premium of \$1.33/cwt...The preconditioned calf

may offer an alternative to the economic losses incurred in operations that experience greater than average morbidity, mortality and treatment costs." Helpful modifications of current preconditioning programs might include limit-creep feeding, improved vaccines and more efficient marketing and shipping methods.

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