

Practice Opportunities in Cow/Calf Health Management

David A. Dargatz, DVM, PhD
Centers for Epidemiology and Animal Health
555 S Howes, Suite 200
Ft. Collins, CO 80521

Abstract

With information from the Cow/Calf Health and Productivity Audit (CHAPA) veterinarians are in a position to demonstrate opportunities for improvement of beef production on cow/calf operations. Economic profitability associated with interventions will need to be determined for each operation. The veterinarian is highly regarded as a source of information by cow/calf producers. Few producers take advantage of available advanced reproductive technology in order to improve production efficiency. Furthermore, few producers use vaccination as a health management tool. The CHAPA would indicate that there is a large base of producers that may benefit from the advice and counsel of veterinarians in areas of breeding, calving, health, and nutritional management.

Introduction

For veterinary practitioners to take advantage of opportunities to help producers improve the beef production efficiency, such opportunities must be identified and shown to increase profitability for the cattle producer. The opportunity for improvement must be demonstrable on both biologic and economic scales (eg. return on investment). There is little advantage in showing that some producers are weaning more pounds of calf per cow exposed if the additional weight gains cost more than the economic return for the added weight of the calf. The means to demonstrate the biologic opportunities exist in the form of the Cow/Calf Health and Productivity Audit (CHAPA). Assessment of the economic impact of addressing these opportunities remains to be analyzed. In the end, the economic assessment will have to be accomplished at the local (firm) level because of the complex inter-relationships between management practices and input costs on each cow/calf operation.

In October of 1992 the USDA:Centers for Epidemiology and Animal Health (CEAH) initiated a 16 month study of the cow/calf segment of the beef industry called the Cow/Calf Health and Productivity Audit (CHAPA). The study had two phases; phase 1 had a reference population of all cow/calf operations in the 48 contiguous states, phase 2 had a reference population of cow/calf operations in 18 targeted states¹ with at least 5 cows or heifers and at least 50% of their calves born in the months of January through June. Over 2500 cattle producers provided data for phase 1. Phase 2 data were

collected from 799 or 540 producers depending on the individual data item. The data were analyzed to account for the sampling design, thus allowing participating producers to represent all the producers in the respective reference population.

Calf Mortality - 1992

The major production commodity of the cow/calf operation is pounds of calf weaned. Threats to the quantity of pounds of calf produced include death losses, theft, and disease which results in reduced gains. Death loss was analyzed by calf age and dam parity. Of all the calves born to replacement heifers in 1992, 5% were dead at birth. An additional 2.5% died within 24 hours of birth. Of all the calves born alive to heifers, 3.8% died prior to 3 weeks of age. Calf losses for cows were lower, as expected, with only 1.6% dead at birth and 1.8% dying in the first 3 weeks of life. Of all calves born alive, 3.5% died prior to weaning. These mortality rates serve as a baseline for comparison to other producers and may help to demonstrate the opportunity available to producers should they choose to implement management procedures to reduce their current losses. The high mortality rates in the peri-parturient period for calves points out the critical nature of this time period and the need to be attentive in order to minimize loss.

Subsequent text will focus on information from phase 2 of the study.

Calving Management

On the average producers checked heifers 2.9 times per 24 hour period during the calving season. Cows were checked less frequently (1.9 times per 24 hour period). Over 60% of producers checked heifers 2 times or less per 24 hour period during the calving season. This limited frequency of observation made early intervention in a dystocia impossible and certainly contributed to death loss of heifers' calves at birth or in the first 24 hours of life.

When producers were asked how long heifers were allowed to labor prior to intervention, 45.2% of the producers indicated that 3 or more hours of labor occurred prior to intervention. On the average, producers allowed

¹States included were; Alabama, Arkansas, California, Colorado, Florida, Georgia, Iowa, Kansas, Kentucky, Mississippi, Missouri, Nebraska, New Mexico, Oklahoma, Tennessee, Texas, Virginia, and Wyoming.

heifers to labor 2.9 hours prior to intervention. Prolonged labor in heifers has been reported to reduce reproductive performance and result in poorer calf performance.¹ Early assistance of calving heifers resulted in a 9% increase in the number of animals cycling at the onset of the breeding season and a 14% increase in the fall pregnancy rate. In addition, calves born to heifers that were assisted early in the delivery tended to have a higher average daily gain from birth to weaning (+.11 pounds).

Culling of Breeding Age Cows and Heifers

Nearly one-third (32.7%) of breeding age females left cow/calf herds in 1993 because they were not pregnant. Cattle sold for breeding purposes (such as replacement heifers) were included in the denominator for this calculation so the proportion of all culls was actually higher. Other reasons for leaving the herd included age (21.4%), economics (drought, herd reduction) (15.2%), production of poor calves (5.2%), and other reproductive problems (3.7%). This information suggests forced culling due to infertility or other reproductive problems (36.4% of the animals culled) drastically reduced the potential for elective culling. There are many reproductive management techniques available to allow for improved reproductive efficiency of the cow herd, however, these techniques were not widely applied in cow/calf herds (see below).

Calf Mortality - 1993

In 1993, 6.5% of calves died on cow/calf operations prior to reaching 500 pounds. The largest proportion of these deaths was attributed to calving problems (31.8%). Weather related problems accounted for 21.5% of calf deaths. Unknown causes were cited for 14.5% of deaths followed by digestive (13.3%) and respiratory problems (11.4%). The high mortality rate associated with calving problems points out how critical the peri-parturient time period is to calf survival and the need for excellent management during this time. Most of the weather related problems also likely occurred during this same time frame. Time spent by the veterinarian in educating the producer about management options for cattle during this time frame could yield large dividends. Also, the fact that 14.5% of calf deaths were attributed to unknown cases, suggests that veterinarians could offer to provide diagnostic services to determine the cause and make recommendations for appropriate management changes to avoid these losses.

The overall calf death loss of 6.5% for 1993 was higher than the 4.4% loss experienced in 1992 by similar operations. In 1993, there was a great deal of concern about the "weak calf syndrome". Indeed, much of the increase in calf mortality may be attributable to this

disease syndrome. Above normal death losses of calves were reported by 25.5% of producers for 1993, while only 13.1% reported lower than expected losses. Most of the reports of the occurrence of weak calf syndrome came from diagnostic laboratories in the Midwest and western United States in early 1993. From the study, 20.8% of producers in the West reported the occurrence of weak calf syndrome. A smaller percentage of producers reported the disease in the Central (8.2%) and Midwestern (7.5%) regions. The occurrence of weak calf syndrome was related to herd size with 10 to 15% of herds with 50 or more cows reporting the disease while only 4 to 6% of herds with less than 50 cows reported the disease.

Reproductive Management

Many techniques are available to cattle producers to improve the breeding of cattle. However, from this study few producers actually use these techniques. Determination of the pregnancy status of the cattle in a breeding herd allows for the implementation of a wide variety of management of strategies. Non-pregnant cows or heifers could be culled, they could be retained and marketed at a later date, or they could be moved to a fall calving herd (if the original herd was spring calving). In spite of the additional flexibility that pregnancy determination can provide, only 15.9% and 17.7% of producers report that pregnancy determination of heifers and cows is utilized.

The use of pelvic measurements as an indexing tool for the selection of replacement heifers has been advantageous in preventing dystocia.² Others have reported little value in the use of pelvic measurement of heifers.³ The controversy over the value of pelvic measurements in heifers may explain why only 3% of producers utilized this technique in the selection of replacement heifers.

Estrus synchronization can be used to condense the breeding and calving season in beef herds and allow increased observation during calving. Estrus synchronization can also make artificial insemination more efficient by having a large number of heifers or cows in estrus at one time thus saving labor costs. Artificial insemination allows for the incorporation of superior genetics into a herd without incurring the full purchase price of a quality bull. However, only 3% of producers utilized any estrus synchronization of heifers and only 3.3% performed any artificial insemination of heifers. Slightly more producers utilized synchronized estrus (4.3%) and artificial insemination (5.4%) for cows.

Body condition scoring is a good measure of the nutritional status of cows and heifers⁴ and future expected reproductive performance.⁵⁻⁹ Cattle that calve in relatively poor condition are less likely to cycle early or become pregnant in the subsequent breeding season

Table 1. Percent of operations using various vaccine antigens by age of calves and cattle on cow/calf operations.

Antigen	Percent of Operations		Replacement Heifers		Cows	Bulls
	Calves	22 days to Weaning	Weaning through Breeding	After Breeding through Calving		
IBR	2.2	17.3	15.9	7.4	17.7	13.2
BVD	1.8	16.0	15.4	7.4	19.4	14.5
<u>Hemophilus somnus</u>	1.6	11.4	9.3	2.6	5.5	5.1
PI3	2.1	15.9	13.7	6.7	15.7	11.3
BRSV	0.7	12.6	10.7	4.8	12.8	8.8
Pasteurella	0.5	8.2	8.2	2.1	5.3	5.3
<u>Brucella abortus</u>	--	18.2	26.9	--	--	--
Leptospira	--	9.4	24.5	13.7	32.6	23.0
Campylobacter	--	--	10.8	5.7	18.2	11.2
Trichomoniasis	--	--	1.5	0.4	2.1	2.5
<u>Clostridium perfringens</u>	9.5	61.4	23.0	6.3	12.7	9.4
<u>Clostridium chauvoei</u>	10.9	66.4	24.5	6.4	12.2	9.3
<u>Clostridium septicum</u>	10.4	65.4	24.0	6.4	12.3	9.4
Rota/Corona	2.2	0.3	0.8	5.1	8.0	0.4
<u>E. coli</u>	2.2	0.6	2.2	7.5	10.1	0.4

than cattle that calve in moderate body condition. Over-conditioning of cattle at calving can have adverse impacts on reproductive performance and amount to wasted dollars spent for feed. Body condition scoring is a simple and highly effective management tool. Yet, body condition scoring of heifers was utilized by only 4.6% of producers. Body condition scoring of cows was used on 5.5% of operations.

Breeding heifers prior to the rest of the herd is advisable because of the longer period required to resume cycling following calving compared to cows. Timing of calving of heifers prior to the cow herd also allows for concentration of efforts on the relatively smaller number of females with more calving problems. Only 12.7% of producers manage heifers so that they are bred at least 2 weeks prior to the rest of the herd. Veterinarians are ideally suited to bring some or all of these techniques to the cow/calf operation and determine if they can be applied effectively.

This study also determined what bull management practices were utilized by producers. Nearly half (48.5%) of producers had purchased, leased, or borrowed a bull in the previous 12 months. Of these, less than half (47%) had the bull's semen evaluated. In essence, there was little attempt made by producers to insure that the bulls would successfully breed and settle cows. Of the producers that acquired new bulls, 60.6% reported that the bulls were over 18 months of age or not considered to be virgin bulls. This raises concern about the introduction of venereally transmitted diseases such as trichomoniasis into the herd. Only 4.4% of operations introducing new bulls tested them for trichomoniasis. Considering the bull battery exclusive of newly added bulls, only 18.3% of operations reported using semen evaluation of bulls and only 2% reported testing for trichomoniasis. The cost effectiveness of semen evaluation of bulls has been dem-

onstrated.^{10,11} The economic disaster that trichomoniasis can bring has also been demonstrated.¹² Here is yet another area where the veterinarian can be of service to the producer in insuring the optimum calf production and minimizing risk for the producer.

Health Management

The percentage of producers using various vaccine antigens and the timing of use is shown in Table 1. Few producers used vaccines for the prevention of even the common disease agents. Only 19.4% of producers reported vaccination of cows for Bovine Virus Diarrhea (BVD) virus in 1993. A large number of beef cattle appear to be at risk for the peracute and hemorrhagic forms of this disease. The most common antigen used in the immunization of cows was *Leptospira* (32.6% of producers). Given this information it would appear that there is an opportunity for veterinarians to discuss the advantages of vaccination with producers and implement targeted herd health programs for their cattle where appropriate.

Information Sources

Most producers (77.3%) considered the veterinarian as a highly important ("very important" or "extremely important") source of information on animal health. The role of the veterinarian as the leading expert on animal health is virtually unchallenged, though some producers cited extension personnel and beef media as "very important" sources of this information. Over half (56.1%) of the producers rated the veterinarian as a highly important source of beef production information. This would suggest that veterinarians are animal health specialists that are also valued as a source of

information on beef production. Interestingly, no other source of beef production information was rated higher than the veterinarian. With regard to nutritional information, producers rated their own personal knowledge as being highly important more frequently than any other source. Veterinarians were considered a highly important source of nutritional information by 54.3% of producers. The areas of beef production and nutrition could represent areas of potential growth for veterinarians and practice builders. These areas are not traditionally perceived as the strength of veterinarians but their background makes them ideally suited to address these issues.

Quality Assurance

The beef industry has devoted much effort to quality assurance of beef. The National Beef Quality Audit identified areas of potential waste in the industry. Programs have been developed to help producers work to reduce wastage. The veterinarian can and should be an integral part of quality assurance on all cattle operations. One example where the veterinarian could play a role is in minimizing injection site blemishes. Administration of irritating substances in the muscle of calves as early as branding time (approximately 2 months of age) has been shown to result in blemishes that persist in the muscle to the time of slaughter. The veterinarian is a key figure to counsel the cattle producer on injection practices as they work with the producer to develop health programs. Further, veterinarians are often perceived as role models for the producer with regard to these practices. When asked about the injection site preferred by their veterinarian for intramuscular injections, 47.7% of producers said the site was the upper hip. This is precisely the area where injection blemishes are a problem and the cattle industry is attempting to educate producers to use more sub-cutaneous injections or at least move intra-muscular injection to the less expensive cuts of meat such as the neck. Recognizing that there are many reasons veterinarians may choose to use the upper hip (or lower hip) for intramuscular injections, such as available facilities and lack of irritation associated with certain products, veterinarians should be care-

ful to explain the reason for site selection and not allow producers to assume that "Doc likes to give all injections in the hip and it doesn't cause a problem."

Summary

There are many opportunities to improve the efficiency of beef production on cow/calf operations. None of them will be profitable for all producers and not all of them will be profitable for a producer. However, through the CHAPA study, a baseline of production practices and health on cow/calf operations has been developed and can serve to identify opportunities for improvement at the local and national levels. Veterinarians are ideally suited to bring many of these opportunities to the attention of producers and with some training and experience to help producers evaluate the cost effectiveness of various management changes to improve production.

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