

# A Practitioner Approach to Consulting and Monitoring a Dairy Heifer Replacement Operation

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## Abstract

This paper is a review of this practitioner's approach to consulting and monitoring dairy heifer replacement programs. It begins by covering key areas of veterinary involvement such as vaccinology, reproduction, health management, and monitoring as it encompasses the life cycle of a custom-raised heifer. Within each of these areas, examples are provided to show how data is collected, analyzed, and reported. The goal of this article is to provide practitioners new to replacement heifer operations a baseline for which to build their own consulting business.

## Résumé

Cet article passe en revue l'approche d'un vétérinaire vis-à-vis la consultation et la surveillance dans le cadre du programme sur les génisses laitières de remplacement d'une ferme. L'article aborde en premier lieu les domaines clés de l'intervention vétérinaire, tels que la vaccinologie, la reproduction, la gestion de la santé et le suivi, sur l'ensemble du cycle de production d'une génisse élevée à forfait. Pour chacun de ces domaines, on donne des exemples de cueillette, d'analyse et de rapport de données. Cet article propose aux vétérinaires néophytes en matière de soins aux génisses de renouvellement une ligne directrice de base à partir de laquelle ils ou elles pourront élaborer leurs propre programme de consultant.

## Introduction

Broadly, the main components of a replacement heifer program include arrival to the heifer yard, vaccination, breeding, health, and finally, departing the heifer yard. While the time a heifer spends in each of these areas varies considerably and overlaps to a large extent, all of these areas have a large impact on the outcome of the heifer making a successful transition into the lactating herd. How veterinarians assist in developing the protocols and monitoring the programs in place greatly influence the outcome of these heifers.

Philosophies are many when it comes to how heifers should be raised. For example, there is tremendous variation in vaccination programs, breeding programs,

and what rates of gain should be among veterinarians and heifer growers. There is more than one way to successfully raise a heifer. The key point is that goals and outcomes should be monitored so that the animal husbandry practices in place may be evaluated. Procedures and protocols need to be standardized and monitored consistently within a facility so that some form of quality control may be applied throughout the process. Clearly stated goals are required as well as the methods on which they will be measured. A veterinarian in this type of consulting role needs to walk the line between protecting the health and growth of the replacement heifer while she is in the heifer yard, yet ensuring that a quality heifer arrives to the feedlot on the first day so the programs in place at the heifer yard start with a heifer that has the ability to achieve that facility's goals.

## Arriving Heifers

Although the arrival period for heifers lasts just a short time, it sets the stage for success of the program. In fact, the most successful programs start before the heifers ever arrive. The heifers will have some form of "pre-conditioning" or "pre-shipment" "vaccination programs. These are defined for each client and dovetail into the vaccination/processing program at the heifer yard.

Upon arrival, a visual scorecard should be taken on body condition scores, injury, thriftiness, and diseases (ringworm, pneumonia, diarrhea, etc.) so that a quick status of the newly arrived heifers can be done. Full access should be given to clean water and a total mixed ration (TMR) that is consistent for the age of the heifers arriving. Placing the animals in a quarantine pen is highly recommended, as issues such as salmonella, bovine viral diarrhea (BVD), and pasteurilla infections are still prevalent.

Arrival processing in the programs used in our consulting practice is a combination of vaccinating, ear-notching for BVD, gathering weight and hip-height data, and applying a unique ID tag. In some programs, treatment for both internal and external parasites may have to be used. All of the arrival processing is done 24-48 hours after arrival. Despite the adage that states we should not vaccinate heifers for at least 10 days to two weeks after a major move, our protocol for 24-48 hour processing has shown no issues for heifers.

## Vaccinology

Vaccination programs span across all the main areas mentioned earlier. The vaccination programs used in our consulting practice utilize modified-live vaccines for the main viruses. Heifers are vaccinated twice, four weeks apart initiated upon arrival, and are boosted between 14-16 months of age. Vaccines are also administered to protect against *Leptospira hardjo*, salmonellosis, and clostridiosis.

## Breeding

The breeding program we employ for heifer facilities depends somewhat on what facilities are available (headlocks, breeding boxes, management rails, and chutes). Weights are attained at 11-12 months of age to determine breeding suitability. A Holstein heifer enters the breeding program when she is 850 lb (386 kg) and at least 52 inches tall at the hip.

Conception and pregnancy rates are monitored on breeders, sires and breeding programs to achieve the best outcome on an ongoing basis. Pregnancy determination is a combination of palpation and blood testing.

Annual reproduction goals for facilities utilizing conventional semen would be a first-service conception rate (CR) of 65-70%, SPC of less than 1.5, and at least 90% of heifers returning home bred to an artificial insemination (AI) breeding. Care must be taken to sort out sexed-semen breedings. Goals for sexed semen would be a first service CR of 45-50%, and SPC of less than 2.0. Other recommendations include no sexed-semen breeding with timed-AI programs, and only use sexed-semen during the first two breedings.

Pregnancy status of all heifers is confirmed at approximately 180 DCC.

## Departing Heifers

Two to seven days prior to departure, each heifer is weighed and vaccinated with SRP. An overall average daily gain (ADG) is calculated on each heifer and she is returned home with a report that states this, along with her due date, current weight, and projected calving weight (assuming the same rate of gain on the home dairy). The producer receives a performance review for every load of heifers.

## Monitoring Health and Performance

Health is largely dependent upon the management, vaccine status, and nutrition plan for the heifers. Once quality programs are worked out in these areas, the largest portion of time spent in the heifer yard comes in defining the case definition for each health event,

training personnel for detection of health issues, and monitoring outcomes of diseased individuals. Most dairy management systems have a method to record health events so that they may be counted and reported on a regular basis. Additionally, knowing the trend of disease events is as important as knowing the actual number of health events.

Consideration needs to be given to the appropriate numerator and denominator. Should abortion rates include heifers on the facility that have never been inseminated? Should a pneumonia rate include springers getting ready to return home when the primary outbreak is in newly arrived, five-month-old heifers? The answers will likely be different for each feedlot; however, so long as the calculation is consistent and the case definition understood, it may be monitored and quality information derived from the rates. Additionally, different sources of heifers may be compared to answer the question of whether the issue involves the entire feedlot or one particular source.

Perhaps more important is performance monitoring. Most facilities tend to monitor reproduction, but what about overall performance? The heifer industry is the only industry known that waits until 24 months to decide if the heifer-raising has been done correctly. The major goal utilized by most facilities is whether or not the heifer calves by 24 months of age. By this point in time the owner has invested substantial cost into owning and raising the heifer, and perhaps the heifer yard has invested in a program where she has not gained or become pregnant, but has continued to reach the goals for that heifer. Both scenarios result in reduced or lost income.

Monitoring ADG is probably the best method possible to achieve some of the basic performance goals. Our programs will evolve around three individual heifer weights: the first weight is upon arrival, the second weight is pre-breeding (11-12 months), and the final weight is taken two to seven days before the heifer leaves the feedlot. Consider what can be done with these weights:

1. In addition to a visual scorecard at arrival, weights of arriving heifers may be compared to peer groups or to groups of heifers from the same source arriving previously as a method of early detection of problems.
2. The pre-breeding weight may be used as the first level of performance review. If the heifer is not meeting a minimum ADG by breeding, she may need to be culled. Having the ADG when speaking with the owners is an excellent surrogate for the producer showing up at the heifer yard to approve heifer culls.
3. ADG at pre-breeding is also an excellent tool for the nutritionist to determine the efficacy of his

- rations or a measure of his managerial skills.
4. Cost-benefit assignments can be made with much greater accuracy.
  5. The weight at the end of a heifer's time at the feed yard is used to put a final number on all that went into getting her to the maternity pen on the dairy. It will point out weakness in a program and also let the owner know exactly the condition at which his heifers return to the dairy.

### Conclusion

There can be several different ways to raise a quality replacement heifer. As long as a quantitative and consistent approach is taken, a quality control program can be implemented through monitoring and programs or protocols adjusted as they are needed. This also provides a baseline for cost, objections to heifer performance, heifer culling, and other issues that may appear during the time the heifer is in the heifer yard. The veterinarian is one of the most logical consultants for this type of work, and can ultimately provide a very profitable outcome for his client.

### DESCRIPTION

CEFTIFLEX™ (ceftiofur sodium sterile powder) contains the sodium salt of ceftiofur, which is a broad-spectrum cephalosporin antibiotic active against gram-positive and gram-negative bacteria, including lactamase-producing strains. Like other cephalosporins, ceftiofur is bactericidal in vitro, resulting from inhibition of cell wall synthesis. Each mL of the reconstituted drug contains ceftiofur sodium equivalent to 50 mg ceftiofur. The pH was adjusted with sodium hydroxide and monobasic potassium phosphate.

### INDICATIONS

**Cattle:** CEFTIFLEX™ (ceftiofur sodium sterile powder) is indicated for treatment of bovine respiratory disease (shipping fever, pneumonia) associated with *Mannheimia haemolytica*, *Pasteurella multocida* and *Histophilus somni*. Ceftiofur Sodium Sterile Powder is also indicated for treatment of acute bovine interdigital necrobacillosis (foot rot, pododermatitis) associated with *Fusobacterium necrophorum* and *Bacteroides melaninogenicus*.

### DOSAGE AND ADMINISTRATION

**Cattle:** Administer to cattle by intramuscular or subcutaneous injection at the dosage of 0.5 to 1.0 mg ceftiofur per pound (1.1 to 2.2 mg/kg) of body weight (1-2 mL reconstituted sterile solution per 100 lbs body weight). Treatment should be repeated at 24-hour intervals for a total of three consecutive days. Additional treatments may be given on days four and five for animals that do not show a satisfactory response (not recovered) after the initial three treatments. Selection of dosage (0.5 to 1.0 mg/lb) should be based on the practitioner's judgment of severity of disease (i.e., for respiratory disease, extent of elevated body temperature, depressed physical appearance, increased respiratory rate, coughing and/or loss of appetite; and for foot rot, extent of swelling, lesion and severity of lameness).

### CONTRAINDICATIONS

As with all drugs, the use of CEFTIFLEX™ (ceftiofur sodium sterile powder) is contraindicated in animals previously found to be hypersensitive to the drug.

### WARNINGS

NOT FOR HUMAN USE. KEEP OUT OF REACH OF CHILDREN.  
Penicillins and cephalosporins can cause allergic reactions in sensitized individuals. Topical exposures to such antimicrobials, including ceftiofur, may elicit mild to severe allergic reactions in some individuals. Repeated or prolonged exposure may lead to sensitization. Avoid direct contact of the product with the skin, eyes, mouth and clothing. Persons with a known hypersensitivity to penicillin or cephalosporins should avoid exposure to this product. In case of accidental eye exposure, flush with water for 15 minutes. In case of accidental skin exposure, wash with soap and water. Remove contaminated clothing. If allergic reaction occurs (e.g., skin rash, hives, difficult breathing), seek medical attention. The material safety data sheet contains more detailed occupational safety information. To obtain a material safety data sheet (MSDS), please call 1-909-392-8900. To report any adverse event, please call 1-909-392-8900.

### PRECAUTIONS

The effects of CEFTIFLEX™ (ceftiofur sodium sterile powder) on the reproductive performance, pregnancy and lactation of cattle, swine, sheep and goats have not been determined.

**Cattle:** Following subcutaneous administration of ceftiofur sodium in the neck, small areas of discoloration at the site may persist beyond five days, potentially resulting in trim loss of edible tissues at slaughter. As with any parenteral injection, localized post-injection bacterial infections may result in abscess formation. Attention to hygienic procedures can minimize their occurrence.

### RESIDUE WARNINGS

**Cattle:** When used according to label indications, dosage and routes of administration, treated cattle must not be slaughtered for 4 days following the last treatment. When used according to label indications, dosage and routes of administration, a milk discard time is not required. Use of dosages in excess of those indicated or by unapproved routes of administration, such as intramammary, may result in illegal residues in edible tissues and/or in milk.

### ADVERSE REACTIONS

The use of CEFTIFLEX™ (ceftiofur sodium sterile powder) may result in some sign of immediate and transient local pain to the animal.

### STORAGE CONDITIONS

Store unconstituted product at controlled room temperature 20° to 25° C (68° to 77° F) [see USP]. Store reconstituted product either in a refrigerator 2° to 8° C (36° to 46° F) for up to 7 days or at controlled room temperature 20° to 25° C (68° to 77° F) [see USP] for up to 12 hours. Protect from light. Color may vary from off-white to a tan color. Color does not affect potency.

### ONE-TIME SALVAGE PROCEDURE FOR RECONSTITUTED PRODUCT

At the end of the 7-day refrigeration or 12-hour room temperature storage period following reconstitution, any remaining reconstituted product may be frozen for up to 8 weeks without loss in potency or other chemical properties. This is a one-time-only salvage procedure for the remaining product. To use this salvaged product at any time during the 8-week storage period, hold the vial under warm running water, gently swirling the container to accelerate thawing, or allow the frozen material to thaw at room temperature. Rapid freezing or thawing may result in vial breakage. Any product not used immediately upon thawing should be discarded.



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