Preparing Florida Calves for the Feedlot: Repairing Our Reputation

Karen Rogers
VRCS
Greeley, Colorado

In an industry whose profit margins are often low, the challenge has become one of maximizing production while keeping production costs as low as possible. This is especially true as it relates to respiratory disease. Bovine respiratory disease (BRD) remains the most costly and prevalent disease complex facing stocker and feedyard operations.

According to the NAHMS 1999 feedyard study, BRD affected almost five times as many placements as the next most commonly reported disease (acute interstitial pneumonia). Overall, producers reported 14.4% of all placements developed BRD while at feedlots.

A survey of 59 feedyards representing 38.6 million cattle between January 1990 and May 1993 acknowledged BRD to account for 44.1% of all dead cattle. Mortality losses, although more visible, are exceeded by losses in production. Production losses are realized through poor performance, labor costs, and medicine costs; not just death loss. BRD costs the industry as much as $1 billion per year.

It is generally accepted that BRD results from an interaction of stressors, animal susceptibility, and pathogens (viruses, bacteria/mycoplasma). Individually, these pathogens do not appear to be capable of causing respiratory disease in healthy cattle. Compromise of the respiratory defense mechanisms (as a result of environmental and management stressors) appears to be critical to the development of BRD. Animal susceptibility to disease would depend on how functional (competent) the animal's immune system is and the degree of exposure.

Major advances have been made in respiratory vaccines, pharmaceuticals, and management systems; however, reluctance to adopt new technology and advances prevents the industry as a whole from moving forward. It is therefore prudent that management practices be implemented and honed to reduce production losses.

Bovine Respiratory Disease is not unique to Florida sourced calves in the feedyard; so why is their reputation so undesirable? Two basic questions need to be addressed:

1. What exactly is the opinion of feedlot operators and consultants and is the reputation justified?

2. Are Florida calves inferior to those of other cow/calf producing states?

In response to the first question, Florida calves are part of a larger group called "southeasterns." Opinions range from "little dying pukes," "challenging at best," to "okay if handled correctly and received at the appropriate time of the year." Not all Florida calves are created equal nor managed the same. However, given the right set of circumstances (i.e. bawling lightweight calves shipped during the fall of the year) the poor reputation can indeed be justified. Secondly, I am unaware of any data that specifically show Florida calves, as a whole, genetically or immunologically inferior to their peers in other cow/calf producing states. While there

is evidence demonstrating a genetic predisposition to disease occurring in other species and it has been speculated to occur in cattle, there has not been any geographic links established.

Why then is it perceived that Florida calves behave differently in the feedlot than their contemporaries with respect to morbidity and mortality? Are there particular stresses that are inherent to Florida calves? Longer distances traveled, greater differences in climate and altitude, and nutritional status are a few of the obvious issues.

No matter their origin, calves need to be prepared to experience extensive distress for varying periods of time. For Florida calves, 32 hours in transit to a feedlot would not be uncommon. Thus, sound husbandry and good management are the keys to producing an animal with a functional immune system capable of combating disease.

General considerations for preparing calves are:

- Gathering/weaning/castration
- Sorting
- Commingling
- Transportation
- Change in feed/water
- Altitude
- Weather – humidity, temperature, precipitation
- Infectious pressure
- Time of year

Distress is an important factor in determining an animal's ability to fight infection and respond to vaccines. The immune system must be highly functional to deal with all of these variables. Feedlot vaccination programs do very little to reduce the initial wave of illness due to respiratory disease at the feedlot because onset of disease occurs before the immune system can respond to vaccines. Vaccination only ensures that the animal has been exposed to the particular antigen (bacteria or virus particle) in the vaccine not that a protective immune response has occurred. Two key components are required for successful immunization:

1. Efficacious vaccine

2. Immunocompetant animal (an animal with a functional immune system).

Additionally, increased cortisol levels in the calves are caused by many environmental and management factors (i.e. weaning, castration, transport, and commingling). Increased cortisol levels depress the immune function of the animal by reducing antibody production in response to vaccine.

Vaccination programs are highly variable and regional and product selection/type can be very controversial. An example of a program for calves received directly from the cow herd to the feedlot is summarized as follows:

1. Modified live BRSV-IBR-PI3 BVD at branding (2-4 months of age).

2. Clostridial 7-Way (UltraChoice or Vision 7) at 2-4 months of age.

3. Modified live BRSV-IBR-PI3 BVD 2-4 weeks prior to weaning if not concerned about immune status of the cow herd.

4. Intranasal IBR-PI3, 2-4 weeks prior to weaning if concerned about the immune status of the cow herd.

Proper handling of vaccines and their administration is necessary for maximizing efficacy and reducing injection site blemishes. Vaccine failures result from inattention to details in critical areas. Guidelines for proper use are as follows:

1. All vaccines should be administered in front of the shoulder according to new Beef Quality Assurance guidelines. New packaging of case-ready meat retail cuts is making injection site blemishes more visible and less desirable to the consumer.

2. If given the option for subcutaneous (SC) use, products should be administered by this route rather than intramuscularly (IM).

3. Even injections administered IM as young as 1-2 months or 6-8 months of age can cause damage that is present at harvest as proven by researchers at Colorado State University.

4. Modified-live viral (MLV) vaccines are extremely sensitive to light once reconstituted.

5. MLV vaccines should not be reconstituted more than 1-2 hours prior to administration.

6. Avoid contaminating vaccine by pulling from the original container, never transfer to a secondary container. Never enter a vial with anything but a transfer needle, vent spike or new needle.

7. Never use chemical disinfectants on syringes, needles, etc.

8. Avoid exposure to sunlight, other UV sources, and heat.

9. Clostridial vaccines can be contaminated and create abscesses or joint infections. Always pull from the original container.

Vaccination programs are critical, but nutritional programs are equally important if not more important. Trace mineral nutrition/supplementation can have a tremendous impact on the immune system of the animal and remains one of the most frequently missed opportunities in cattle prior to shipment to feedlots. Supplementation should be provided throughout the life of the calf. Levels and elements should be determined for the geographical area. It is not uncommon to have deficiencies in copper, zinc, and selenium. Deficiencies or potential deficiencies can be determined by:

1. Analyzing liver levels on any cattle that die acutely (suddenly)

2. Liver biopsies

3. Analyzing feedstuffs (grass, hay, and concentrates) for copper, selenium, and/or zinc deficiencies and levels of molybdenum and sulfates which bind and interact with copper

4. Analyzing water for Molybdenum and sulfates

On arrival at the feedlot we are using products that contain:

- Copper – 2000-3000 ppm
- Selenium – 20-50 ppm
- Zinc – 3000-4000 ppm
- Little or no iron
- Ca:P ratio of 2:1
- Salt

Preconditioning programs have gained increased acceptance and are growing in popularity. If a vaccine is used in any fashion other than prior to exposure, vaccine efficacy will be less than optimal. Pre-exposure vaccination, while not a guarantee, has proven to be beneficial. In a controlled study, where the effect of preconditioning on feedlot health was investigated, morbidity was reduced from 26.5% to 20.4% and mortality 1.44% to .74%. Other researchers have reported an approximate 20-30% reduction in morbidity and 1.7% decline in mortality.

Optimal control of pneumonia in feedlot-destined cattle begins with effective management of passive transfer. Passive transfer of maternal antibodies present in colostrum is an important event in preventing respiratory and other disease. The impact on

health and future performance has been shown to continue past weaning.

Prevention of disease through management practices prior to arrival at the feedlot increases survivability and performance and maximizes monetary returns. Enhancing the immune system by minimizing stress, providing proper/timely vaccinations, therapeutics, and dietary supplementation, and using proper animal husbandry practices all aid in increasing an animal's ability to cope with disease and increased disease resistance.

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