

HEALTH & HUSBANDRY

Minimize disease by lowering stress

by Lacey Fahrmeier, Stillwater Veterinary Clinic, Absarokee, Mont.



During the last 40 years, we've acquired a lot of knowledge about the pathogenesis of bovine respiratory disease (BRD). Advancements have been made with vaccines and antimicrobials for the prevention and treatment of BRD. Yet, despite these recent advances, the prevalence of BRD in feedlot cattle has not been reduced, and the incidence of preweaning pneumonia is on the rise.

If the solution to the industry's leading health challenge can't be found in a magic, cure-all injection, perhaps we've reached the point where a radical shift in best management practices and the system as a whole is needed.

Evidence is mounting that stress plays an enormous role in disease susceptibility and severity in both people and animals. "Low-stress" cattle handling is a term with which we are all familiar, and its implementation has proven to greatly improve the health, well-being and efficiency of cattle in all phases of production.

What if we applied this concept to every aspect of a calf's existence, making it a priority to give them a "low-stress" life? Keeping this notion central to every management or marketing decision we make could enhance immune function and overall health.

The disease triad

When analyzing the cause of illness, there are three elements that make up the "disease triad" in cattle: pathogen, host and environmental stress factors.

Pathogen factors include dose, reservoir, environmental hardiness, contagiousness, infectivity

(including drug-resistant adaptations) and virulence. Unfortunately, these pathogen issues are about as much out of our control as inclement weather. So let's focus on the parts of the disease triad we can positively affect: environmental stress factors and the host.

Environmental stress factors include sanitation (mud, dust), animal density, animal movement between groups, group size and social stress. All of these affect immune system competence or immunosuppression, which is influenced by factors such as internal parasite burden, stress (environmental, social, disease), nutritional deficiency and genetics.

Host/animal factors in the disease triad are influenced by age, innate resistance, immune status, nutritional status and genetics. Ultimately, some self-reflection and innovative thinking with regard to areas (health, nutrition, animal care) where we can intervene or adjust our management practices are needed to affect disease risk.

Defining stress

In veterinary contexts "stress" is identified as an abnormal or extreme adjustment in the physiology of the animal to cope

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Ideally, all calves arriving at a feedlot would be vaccinated with at least two series of clostridial and viral vaccines, weaned for at least 45 days prior to arrival, castrated and healed, and dehorned and healed.

with adverse changes in the environment and management. Transportation, fear, overcrowding and weaning in the form of social reorganization are a few of the important types of physiological stressors identified in the literature. These stressors have been linked to immune suppression, disease susceptibility, hypertension and reproductive dysfunctions.

The relationship between stress and disease susceptibility is highly complex and intertwined with cascades of events. I'll spare you the mind-boggling alphabet soup of pro-inflammatory cytokines involved, and suffice it to say that scientists have discovered that interactions between the immune and nervous systems play an important role in modulating host susceptibility and resistance to inflammatory disease. It is becoming

more apparent that stress not only makes an individual more susceptible to disease, but can also enhance disease severity.

While BRD is a viral and bacterial disease of the respiratory tract, a multitude

of stressors can suppress a calf's immune system, allowing for viral and bacterial pathogens to replicate within the calf's respiratory tract. Some of these risk factors can be effectively managed at various phases of production.

Ounce of prevention

With regard to disease prevention and optimizing immune response to vaccination, I simply can't overemphasize the importance of preweaning shots done three to six weeks prior to the stress of separation from the dam. I realize that preweaning vaccination is no small task, requiring additional labor, time and money compared to the convenience of vaccinating only at grass turnout and weaning times.

In an effort to minimize stress at weaning, I encourage producers to consider fenceline weaning practices and to avoid any processing or vaccinations for at least 10 days.

A recent disease challenge study (calves inoculated with bovine herpes virus followed by

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Extended-Release Injectable Parasiticide
5% Sterile Solution
NADA 141-327, Approved by FDA for subcutaneous injection
For the Treatment and Control of Internal and External Parasites of Cattle on Pasture with
Persistent Effectiveness

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS FOR USE

LONGRANGE, when administered at the recommended dose volume of 1 mL per 110 lb (50 kg) body weight, is effective in the treatment and control of 20 species and stages of internal and external parasites of cattle:

Gastrointestinal Roundworms	Lungworms
<i>Bunostomum phlebotomum</i> – Adults and L ₄	<i>Dictyoacaulus viviparus</i> – Adults
<i>Cooperia oncophora</i> – Adults and L ₄	
<i>Cooperia punctata</i> – Adults and L ₄	
<i>Cooperia surnabada</i> – Adults and L ₄	
<i>Haemonchus placei</i> – Adults	Grubs
<i>Oesophagostomum radiatum</i> – Adults	<i>Hypoderma bovis</i>
<i>Ostertagia lyrata</i> – Adults	
<i>Ostertagia ostertagi</i> – Adults, L ₄ and inhibited L ₄	
<i>Trichostrongylus axei</i> – Adults and L ₄	Mites
<i>Trichostrongylus colubriformis</i> – Adults	<i>Sarcoptes scabiei</i> var. <i>bovis</i>

Parasites	Durations of Persistent Effectiveness
Gastrointestinal Roundworms	
<i>Bunostomum phlebotomum</i>	150 days
<i>Cooperia oncophora</i>	100 days
<i>Cooperia punctata</i>	100 days
<i>Haemonchus placei</i>	120 days
<i>Oesophagostomum radiatum</i>	120 days
<i>Ostertagia lyrata</i>	120 days
<i>Ostertagia ostertagi</i>	120 days
<i>Trichostrongylus axei</i>	100 days
Lungworms	
<i>Dictyoacaulus viviparus</i>	150 days

DOSAGE AND ADMINISTRATION

LONGRANGE® (eprinomectin) should be given only by subcutaneous injection in front of the shoulder at the recommended dosage level of 1 mg eprinomectin per kg body weight (1 mL per 110 lb body weight).

WARNINGS AND PRECAUTIONS

Withdrawal Periods and Residue Warnings

Animals intended for human consumption must not be slaughtered within 48 days of the last treatment. This drug product is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. A withdrawal period has not been established for pre-ruminating calves. Do not use in calves to be processed for veal.

Animal Safety Warnings and Precautions

The product is likely to cause tissue damage at the site of injection, including possible granulomas and necrosis. These reactions have disappeared without treatment. Local tissue reaction may result in trim loss of edible tissue at slaughter. Observe cattle for injection site reactions. If injection site reactions are suspected, consult your veterinarian. This product is not for intravenous or intramuscular use. Protect product from light. LONGRANGE® (eprinomectin) has been developed specifically for use in cattle only. This product should not be used in other animal species.

When to Treat Cattle with Grubs

LONGRANGE effectively controls all stages of cattle grubs. However, proper timing of treatment is important. For the most effective results, cattle should be treated as soon as possible after the end of the heel fly (warble fly) season.

Environmental Hazards

Not for use in cattle managed in feedlots or under intensive rotational grazing because the environmental impact has not been evaluated for these scenarios.

Other Warnings: Underdosing and/or subtherapeutic concentrations of extended-release anthelmintic products may encourage the development of parasite resistance. It is recommended that parasite resistance be monitored following the use of any anthelmintic with the use of a fecal egg count reduction test program.

TARGET ANIMAL SAFETY

Clinical studies have demonstrated the wide margin of safety of LONGRANGE® (eprinomectin). Overdosing at 3 to 5 times the recommended dose resulted in a statistically significant reduction in average weight gain when compared to the group tested at label dose. Treatment-related lesions observed in most cattle administered the product included swelling, hyperemia, or necrosis in the subcutaneous tissue of the skin. The administration of LONGRANGE at 3 times the recommended therapeutic dose had no adverse reproductive effects on beef cows at all stages of breeding or pregnancy or on their calves. Not for use in bulls, as reproductive safety testing has not been conducted in males intended for breeding or actively breeding. Not for use in calves less than 3 months of age because safety testing has not been conducted in calves less than 3 months of age.

STORAGE

Store at 77° F (25° C) with excursions between 59° and 86° F (15° and 30° C). Protect from light. Made in Canada. Manufactured for Merial, Inc., Duluth, GA, USA. The Cattle Head Logo and LONGRANGE are registered trademarks of Merial, Inc. ©2015 Merial, Inc. All rights reserved. 1050-2889-06, Rev. 2/2015, 8LON016C

Mannheimia haemolytica) showed a significant difference in BRD clinical disease when comparing freshly weaned calves (80% death loss) vs. preconditioned calves weaned for two weeks (40% death loss).

In the face of a severe disease challenge, that extra time and effort spent acclimating calves can be a lifesaver.

Ideally, all calves arriving at a backgrounding and preconditioning facility, stocker operation or feedlot would be vaccinated with at least two series of clostridial and viral vaccines, weaned for at least 45 days prior to arrival, castrated and healed, and dehorned and healed.

For most producers this is not revolutionary information, but perhaps there have been hurdles to implementing all of these best management practices. Now that we know the

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dramatic effects of stress on cattle health, we must make it a priority to do everything in our power to provide them a low-stress life. Doing so will ultimately improve the overall sustainability (economical, environmental and social) of the beef industry. |

Editor's note: "Health & Husbandry" is a regular column in the *Angus Beef Bulletin* devoted to the care and well-being of the herd. Since starting this column, author Lacey (Robinson) Fahrmeier has moved from her position at Kansas State University into private practice, joining the team at Stillwater Veterinary Clinic in Absarokee, Mont.

AngusSource® adds genetic verification

Many cattlemen can say their calves are "Angus-sired," but when buyers want added assurance, the AngusSource® program now offers an option to document that fact.

The American Angus Association recently added genetic verification into its USDA process-verified program (PVP).

"We want our commercial producers to have the tools they need to be eligible for any marketing track they might want to take," says Ginette Gottswiller, director of commercial programs for the Association.

"When we saw demand at the packing level for verified Angus usage, it was a logical addition."

As Angus-influenced cattle are evaluated for USDA branded-beef programs, the Association's Live Animal Specification determines initial eligibility. Cattle qualify in one of two ways, by:

- ▶ phenotype — predominantly solid black; or
- ▶ genotype — traceable to one parent, or two grandparents, registered with the American Angus Association.



The new Angus-Sired Genetics component enables cattle to qualify as Angus-influenced under the genotype requirement, regardless of hide color.

"This program is designed to document and add value to calves in a marketplace demanding additional transparency," Gottswiller says.

All cattle enrolled in AngusSource are automatically group-age- and source-verified. Other verifiable enrollment options include:

- ▶ Non-Hormone Treated Cattle (NHTC);
- ▶ Never Ever3 (NE3), or a "never ever" program that certifies the animals have never received hormone growth promotants, antibiotics or been fed animal byproducts;
- ▶ Cattle care and handling, a documentation and audit program; and
- ▶ Calf management, which certifies preventative animal health programs.

"Adding the Angus-Sired Genetics option gives progressive cattlemen one more tool to be successful and grow their profits," she says. "That's our continual goal."

For more information about AngusSource enrollment, visit www.angussource.com. |