



Respiratory Illnesses

AS-1154, September 1998

Dr. Charlie Stoltenow, Extension Veterinarian
Dr. Greg Lardy, Extension Beef Specialist

Bovine respiratory disease (BRD) is a respiratory disease complex that accounts for a significant portion of cattle/calf losses in the beef industry. This complex is manifested as one entity, bronchopneumonia. Yet, it can be caused by a variety of factors that interact to cause severe respiratory distress and possibly death. BRD in beef calves is called shipping fever, because the greatest incidence of bronchopneumonia occurs after shipment to stocker operations or feedlots. The main cause of BRD illness in calves is the tremendous exposure to infectious agents along with stress associated with weaning, commingling, and transportation.

Clinical Signs

The clinical symptoms of BRD usually develop five to 14 days following management or environmental stresses. Signs can be variable due to the many causative agents possibly involved in the disease complex. Signs include:

- anorexia (not eating)
- rapid and labored breathing
- depression and weakness
- droopy ears
- coughing
- nasal and ocular discharge (runny nose and eyes)
- fever (up to and over 104 F; normal is 101.5 F)
- stiff and/or staggering walking movement
- hanging back from the rest of the herd
- sudden death

Onset of BRD can be quite dramatic and rapid. Discovery of dead cattle and a high percentage of animals exhibiting depression and other signs of illness are not uncommon.

Experimentally, the most common early symptom of BRD is appetite depression or anorexia and fever, so it is very important to diligently check and recheck newly stressed cattle for feed consumption. Tracking feed intake with records can be very beneficial. Cattle that have been off feed for over a day may appear gaunt.

Early in the course of BRD the cattle may appear slightly depressed. They may hold their head slightly lower than normal, have droopy ears, and be less interested in their environmental surroundings than their herd-mates. Cattle with BRD often exhibit a stiff gait. Diarrhea can often be a symptom associated with the complex.

Respiratory involvement progresses quickly. A soft repetitive cough is usually associated with the clinical course. Watery eyes and a clear nasal discharge are often noticed. Left untreated, the animal can progress to heavy, labored breathing. Ultimately the animal will die from asphyxiation.

Table 1 shows the effect of transit stress on intake of calves at the feedlot following shipping. The decrease in dry matter intake (and consequently, the decrease in the intake of essential nutrients) by diseased calves can compound health problems and decrease performance. Depressions in dry matter intake can last up to two months.

Table 1. Dry matter intake (% of body weight) of newly arrived calves.

Days After Feedlot Arrival	Healthy	Diseased
0-7	1.55	0.90
0-14	1.90	1.43
0-28	2.71	1.84
0-56	3.03	2.68

Adapted from Hutcheson and Cole. 1986. J. Anim. Sci. 62:555-560.

Diagnosis

The objective for diagnosing any disease is improve overall health management in your herd or feeding operation. If obtaining a diagnosis will not cause a change in health management practices, then it will probably be a waste of time and money. However, without a diagnosis you are left with guessing and conjecture as to the true nature of the disease condition. You should consult your veterinarian regarding health management in your herd.

When submitting samples to a diagnostic laboratory for diagnosis, you or your veterinarian should supply a detailed case history. Information should include species of animal, age, sex, number of animals in the herd, number of animals affected, and number of animals dead. Include information regarding clinical symptoms (signs) including date of onset and duration of symptoms. Was there any previous treatment such as vaccination, medication, or nutritional supplementation? Were there any animal movements such as additions to the herd (from outside sources) or pasture rotation?

Animals or tissues should be submitted for diagnosis as soon as possible after death. Once death occurs, tissue changes and decomposition starts, which will quickly make any diagnosis impossible. The problem is exacerbated during periods of warm or hot weather.

Treatment

Even with modern vaccines and prevention programs, BRD still occurs and can cause catastrophic losses. In 1968, Dr. George L. Crenshaw said, "Respiratory diseases of cattle, particularly those associated with shipping fever, are extremely complex, and it is questionable that they will ever be solved completely with our present methods of weaning, processing, shipping and handling after arrival at the feedlot." This statement is still accurate.

Any treatment program objectives should include:

- Reduction of death loss
- Reduction in the rate of chronic cases
- Improvement of performance in calves that have been sick
- Improvement of animal welfare
- Cost effectiveness

Sick animals should be isolated from other animals in the herd. It keeps them from passing the infection to others, competition with other animals for feed, water, and space is reduced, and it facilitates monitoring and retreatment, if needed.

Mass Medication vs. Individual Animal Treatment

Should you medicate the individual animal or the whole herd? Obviously, each sick animal should be treated, or they will have a very high risk of dying. If the illness is complicated by bacteria, appropriate antibiotic selection can be made through consultation with your veterinarian and using culture and sensitivity tests performed on tissues collected at necropsy.

Mass medication, antibiotics given on arrival to all cattle, is a management strategy that has gained acceptance and has been demonstrated to be effective and economical under certain conditions. The exact mechanism by which mass medication therapies work to improve health is not known. One explanation is that pathogenic bacteria that reside in the nose and throat area are eliminated or greatly reduced in numbers. This reduces the chances of calves becoming clinically ill with bacterial pneumonia. Bacteria are the only agents that are impacted by mass medication. The spread of viruses and viral infection will not be impacted. In outbreak situations when mass medication has been used and response to antibiotic therapy in sick cattle is poor, then a primary viral component is likely to be responsible.

University of Nebraska research indicates the mass medication upon arrival at the feedlot, with Micotil•, resulted in a significantly lower number of cattle requiring treatment (33.7% vs. 11.8%). However, mass

medication upon arrival resulted in higher cost of gain and poorer breakevens compared to individual treatment for respiratory disease.

One of the most effective tools for diagnosis and treatment of BRD is the use of a rectal thermometer. Animals suspected of having BRD should have temperatures taken and be treated based on rectal temperature. Sick animals should be isolated to prevent the spread of the disease to others in the pen.

Effective treatment of BRD requires planning instead of reacting. The following points should be implemented on any cattle operation:

- Treatment schedules for primary disease conditions need to be formulated in advance by veterinarians who are familiar with the operation. The treatment schedule should include a therapy, length of treatment, dosage for each drug, route of administration, size of needle if necessary, site of injection, and withdrawal time.
- High risk animals may need to spend time in sick pens. This reduces the stress of competition within the pen for fresh feed, water and space. Recovery pens also may allow for smoother retreatment procedures at timed intervals.
- Consider revaccination in problem pens. Underlying viral infection can result in illness rates greater than 5% per day, and response rates to first time antibiotic therapy of 80% or less.

Prevention

Prevention of BRD requires proper planning and careful attention to herd health management. There are only two ways to prevent and control outbreaks of infectious disease, 1) break the disease cycle or 2) alter immunity of the herd. Risks of BRD outbreaks can be reduced by:

- Developing a proper pre-weaning vaccination procedure (vaccinating two to three weeks prior to weaning, followed by booster vaccinations at weaning).
- Purchasing source-verified cattle from herds with a known health history.
- Weaning cattle and acclimating them to eating from a bunk prior to shipment.
- Reducing stresses related to shipping and handling cattle.
- Eliminating commingling of cattle from various sources at weaning and shipment.
- Observe freshly weaned calves or new arrivals at the lot several times daily. Watch cattle closely for signs of sickness.
- Isolate sick cattle in a separate pen.
- Develop a sound nutritional program for incoming cattle which will ensure that cattle adapt easily to eating from a feed bunk. Poor nutrition can compromise the animal's ability to fight disease.

Summary

Prevention, rather than treatment, of BRD is the primary objective of a herd health management plan. To be successful in combating BRD, a well thought out treatment plan needs to be in place. Components of the plan should include prevention, disease detection, diagnostics, monitoring for treatment failures and treatment plans. Good records will allow analysis of these activities and help determine if the herd health management plan is meeting your goals and expectations.

Finally, the people who care for these animals must be properly trained, motivated, and assigned a reasonable workload. It is people making decisions that affect the health outcome of these animals.

Mention of specific trade names does not imply recommendations by North Dakota State University or the North Dakota State University Extension Service.

AS-1154, September 1998

County Commissions, North Dakota State University and U.S. Department of Agriculture cooperating. Duane Hauck, Director, Fargo, North Dakota. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. We offer our programs and facilities to all persons regardless of race, color, national origin, religion, gender, disability, age, veteran's status or sexual orientation; and are an equal opportunity institution. This publication will be made available in alternative formats for people with disabilities upon request, 701 231-7881.

INFORMATION ACADEMICS RESEARCH EXTENSION CALENDAR WEATHER DIRECTORY

[Information for Prospective Students](#)

NDSU is an equal opportunity institution

This information may be copied for noncommercial, educational purposes in its entirety with no changes.

Requests to use any portion of the document should be sent to permission@ndsuext.nodak.edu.

North Dakota State University Agriculture and University Extension
Morrill Hall, P.O. Box 5562, Fargo, ND 58105-5562