



The Veterinary Link

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Protect your calves against BRD

Bovine respiratory disease (BRD), or pneumonia, is a leading cause of disease loss in beef cattle. Although cattle can get BRD at any time in their life, the greatest risk occurs when calves are near weaning age and are mixed with cattle from other herds.

Under stress

The protection that calves receive against BRD from their dam's colostrum is decreasing or gone by the time calves are weaned, and the stress of being separated from their dams and being moved to a new location also increases the risk of pneumonia. Other potent stressors for cattle are weather stress and the social stress of being mixed with new cattle (see Fig. 1).

Even though the air cattle breath is contaminated with dust, bacteria and viruses, cattle have a number of defense mechanisms to remove most of the contaminations, so normally the lung does not contain any viruses or bacteria. However, stress can reduce the ability of the normal defense mechanisms to work

effectively, allowing viruses and bacteria to reach the lung and cause BRD.

Environmental stressors include heat or cold stress, as well as dust and fumes toxic to the lining of the respiratory tract. Dehydration, exhaustion, rough handling and mixing cattle into new social groups are examples of management stressors. Failure to provide adequate water, energy, protein or minerals causes nutritional stress.

Viral infection to reduce the respiratory tract defense mechanisms are usually necessary in order to allow bacteria to reach the lower parts of the lung causing the severe pneumonia that can result in death. Infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD) and parainfluenza-3 virus (PI₃) are three viruses that are known to cause damage to the lining of the respiratory tract, causing inflammation, damaging the lung's defense mechanisms and allowing suitable sites for bacteria to live in the lung.

In general, bacteria do not serve as a cause of BRD in healthy, unstressed

cattle. Damage to the lining of the lung and immune suppression are required for bacteria to colonize the lung and cause pneumonia. *Mannheimia haemolytica* is the most commonly isolated bacterial agent in fatal cases of BRD. *Pasteurella multocida* is also isolated from fatal BRD cases, especially in younger cattle. Both of these bacteria normally reside in the upper respiratory tract and are able to invade the lung only if defense mechanisms break down.

Clinical signs of BRD usually develop within 14 days following environmental or management stressors. *Haemophilus somnus* has been reported to cause fatal BRD in some areas, and mycoplasmal and chlamydial species of bacteria are isolated from some cases of BRD, usually along with other bacterial pathogens known to cause pneumonia.

Strategies to prevent BRD

Prevention strategies involve limiting the number of stressful events near the time of shipment to a new facility, maintaining sanitary lots and trucks, and properly using vaccines and antibiotics. Proper handling and management of cattle during processing is essential to minimize stress, to reduce the risk of injury and to detect sick cattle as soon as possible.

During hot weather, cattle should be processed early in the morning to avoid higher environmental temperatures later in the day and to avoid artificially elevated body temperatures taken in the afternoon. Calves with a high body temperature or showing other signs of

illness should be separated from the group and kept in a hospital pen where they will receive a treatment program outlined by the veterinarian working with you. Even though body temperature can be a valuable indicator of illness, too much reliance can be placed on it. The appearance and history of the calves should be considered in deciding whether the calf is actually ill.

Viral vaccines can help protect calves from bacterial pneumonia by preventing sufficient viral damage to the respiratory tract to allow bacterial colonization. It is tempting to use all available vaccines and bacterins to minimize disease. But, many calves at weaning or during transport to another facility are highly stressed, and they may be able to respond to only a limited number of vaccines. Therefore, your veterinary plan must consider the following when outlining a vaccination program: risk of disease, stress level of the calves, age of calves and presence of colostrum antibodies, stress induced by vaccination, efficacy of the vaccine, previous vaccination history, and the time of onset of disease after arrival. Vaccination programs should be tailored to meet the needs of calves of various ages, levels of stress and origins.

Some producers utilize mass-medication with injectable, long-acting antibiotics at times of high risk for BRD in an effort to reduce the number and severity of sick animals. Timing is important because mass medication too far in advance of the onset of illness or too late will be ineffective.

Pneumonia will continue to be an important disease for cattle producers to manage. Good animal husbandry to minimize stress and the use of vaccines can help prevent or reduce the severity of many outbreaks. Proper management at the time cattle are transported to a new facility — including early detection of pneumonia and appropriate treatment — will minimize the losses associated with the disease.



Fig. 1: Path for causes of BRD

