

# Vet Call

by Dr. Bob Larson, DVM, University of Missouri-Columbia



## Pneumonia caused by pasteurella organisms

Pneumonia is arguably the most serious disease in the cattle industry in terms of death rate and monetary loss. The chain of events that leads to pneumonia is complex and is different for cattle of different ages and management.

Generally speaking, veterinarians consider stressors — such as weaning, hauling, commingling, exposing cattle to periods of no or unfamiliar feed and water, and dealing with adverse weather — to be common initial insults that make calves susceptible to pneumonia. Viral infection can follow a stressor and usually precedes bacterial pneumonia.

Infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), parainfluenza virus (PI3) and bovine respiratory syncytial virus (BRSV) are known to damage the lining of the respiratory tract, which causes inflammation, damages the lungs' ability to remove invading particles and allows suitable sites for bacteria to attach and to grow. These viruses by themselves do not usually cause serious disease; however, they decrease the calves' ability to ward off serious disease-causing bacteria, such as *Pasteurella*.

In general, bacteria cannot cause pneumonia in healthy, unstressed cattle. Damage to the lining of the lung and immune suppression are required for bacteria to colonize the lung and to cause pneumonia. *Pasteurella haemolytica* is the most commonly isolated bacteria in fatal cases of pneumonia. *Pasteurella multocida* is also isolated from pneumonia cases. Both of these bacteria are normally found in healthy cattle in the upper respiratory tract (throat area) and are able to invade the lung only if defense mechanisms break down.

The name for *Pasteurella haemolytica* has been changed to *Mannheimia haemolytica*, so you may begin to see this name in print and in discussions about pneumonia. For this article, I will continue to use the old name.

**Clinical signs of pneumonia** usually develop within 14 days following environmental or management stressors.

Sick cattle may appear to lack rumen fill or exhibit nasal discharge, increased respiratory rate or respiratory difficulty. Rumen fill is important to evaluate because sick cattle often do not eat. Sick cattle also may "tank up" on water but refuse to eat hay or grain. Thick nasal discharge is a common indication of respiratory disease.

Sick animals may act differently than their healthy penmates. They may seem less interested in their surroundings, lower their heads or ears, and be reluctant to move. Sometimes, when they move, they move without "purpose." When the cattle are slowly moved around the pen, sick cattle often filter to the back of the group or even begin to lag behind or stop walking altogether.

Once cattle are identified as needing treatment for respiratory disease, they should be moved to a treatment area and treated with at least a three-day protocol of antibiotics. The antibiotics used should reach effective concentrations in the diseased lung and be effective against the bacterial organism that is causing pneumonia.

Several good antibiotic choices exist, and the final determination of which product to use is based on how the antibiotic distributes itself in the calf's body, laboratory determination of susceptibility of the bacterial organisms to the antibiotic and previous clinical response on that particular farm.

Cattle that are dehydrated often are given oral fluids with a stomach tube in addition to antibiotic therapy. Fresh hay and water and palatable feed always should be available for sick calves.

Cattle that don't respond to therapy with improved appetite, weight gain and respiratory function are determined to be "nonresponders" or "chronics." Cattle that respond to treatment and are returned to their home pen only to be pulled from the pen at a later date for a second case of respiratory disease are called "repulls."

A high incidence of chronics indicates the cattle were not identified early in the disease process. A high incidence of repulls indicates

either the cattle were not evaluated properly at the end of the initial treatment period or the initial treatment was not adequately effective.

**Prevention strategies** involve limiting the number of stressful events near the time of shipment to a new facility, maintaining sanitary lots and trucks, and using vaccines and antibiotics properly. Viral vaccines can help protect calves from bacterial pneumonia by preventing sufficient viral damage to the respiratory tract to allow bacterial colonization.

Modern *Pasteurella* vaccines are thought to be effective if given well in advance of stressors that lead to pneumonia (two to four weeks). Some producers use mass medication at arrival or a few days later with injectable, long-acting antibiotics in an effort to reduce the number and severity of sick animals. If fresh cattle are received, and if there is sufficient skilled labor available, this practice may not be cost-effective.

When there is a shortage of labor or when employees are not skilled at detecting sick cattle early, mass medication may be a useful management tool. It is of greatest benefit when it is used on cattle assembled from several sources that have been in the marketing system for several days. 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.

e-mail: [larsonr@missouri.edu](mailto:larsonr@missouri.edu)