

A Breathless Problem: Pneumonia Outbreaks in the Dairy

If the cool mornings weren't my reminder that fall is just around the corner, my confirmation came in the form of a frantic phone call I received early on a Sunday of my last on-call weekend. The call came from an owner of a 60 cow robotic dairy. He'd had 5 animals acutely break with pneumonia in the previous 36 hours. They included fresh and peak-milk cows plus a bred heifer.

The producer was describing an increasingly common type of pneumonia outbreak in dairy herds. Over the past 4 years, our practice has now worked up 8 of these outbreaks. It has an acute onset that can quickly infect a mature milking herd and cause clinical cases of over 30% of cows. The causative agent of these outbreaks is usually by the bacteria *Mannheimia Haemolytica* but the northern states have identified *Bibersteinia Trehalosi* as another culprit. Mannheimia is one of the common bacterial causes of shipping fever in beef cattle. It causes an acute (hours), severe, fibrinous pneumonia in which the bacteria secretes a leukotoxin that is lethal to white blood cells, causing a fast buildup of fluid/pus (dead cells and proteins) in the air sacs of the lung which quickly compromises the ability to exchange oxygen.

Mannheimia bacteria can be normal residents of the upper respiratory tract. It's not uncommon to culture it from nasal swabs of otherwise healthy calves or cows. The airways of cattle have many active processes to keep particles and bacteria like this out of the lungs. Disease occurs when Mannheimia is able to evade these active processes and infect lung tissue. Most outbreaks are tied back to a stressful event of the initial animal that broke with disease. Shipping/transport, new cattle additions, concurrent viral pneumonia outbreak and sudden ventilation failures in barns have all been linked as the trigger of outbreaks in herds we've investigated. On the other hand, not all outbreaks have an obvious trigger. We've seen them in well managed, closed herds that are fully vaccinated... more on this point later.

If you have a cluster of pneumonia cases over a period of 1-3 days, it's crucial to call your vet. Response time to an outbreak is crucial. It limits mortality but it also limits severity of sickness and the production drop that ensues. Due to the severity of the pneumonia, it's not uncommon for affected cows to dry up or for cows to require antibiotics indicated for non-lactating animals.

In the face of an outbreak, 1) herd-wide vaccination with an injectable vaccine is superior to vaccinating with an intranasal product. The injectable vaccine contains the immobilized leukotoxin while intranasal vaccines do not. (Remember: the leukotoxin is what causes such severe disease as it kills white blood cells sent to fight the infection). We've had success in getting ahead of an outbreak with herd-wide injectable vaccine and it is the cornerstone of our response. 2) Aggressive and timely antibiotic + NSAID therapy must also be administered. For early detection, monitor cows closely and watch for milk/intake deviations, visit behaviours, rumination drops, etc. Then rectal temp those cows. If fevered, treatment is highly indicated.

What can be done to prevent an outbreak? 1) Keep a closed herd, limit additions and ensure they're vaccinated. 2) Ensure proper ventilation year round in your barns, even in colder months. 3) Ensure your herd is up to date on MLV vaccination. *There has been a very stark difference in outcomes (both sickness and death) within herds when comparing well vaccinated herds to poorly vaccinated herds!* 4) Vaccinate your herd against Mannheimia Haemolytica (MH) with a specific MH bacterin- there are several on the market. Numerous herds have now begun to vaccinate their entire milking and dry herd 1x/year with a MH bacterin vaccine (injectable). It carries a very low risk of abortion and milk production drop. The vaccine is also very inexpensive.

This is only meant as a cautionary tale but outbreaks are more common than we think. As we head into the cool and variable temperatures of fall, it's certainly back on the radar of dairy veterinarians. Dr. Crawford is an owner of Crawford Veterinary Services in Atwood, Ontario.