

Neospora caninum Infection And Abortion In Cattle

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Neospora caninum is a common coccidian parasite of cattle that usually causes an unrecognized infection. It has a worldwide distribution and infects all breeds of cattle. The disease is most commonly associated with abortions but decreased milk production in first calf heifers and the birth of calves that can not stand have also been seen.

The organism was first recognized in dogs in 1980 and was linked to an abortion epidemic in a New Mexico dairy in 1989. In 1998 the dog was recognized as the definitive host (animal where the entire life cycle of the parasite can be completed). The dog eats infective stages of the parasite and subsequently passes infective organisms in its feces. The cow and a variety of other animals are intermediate hosts (animal where infection occurs by eating infective stages or transmission from an infected dam but the parasite is not passed in the feces). After infection occurs in the intermediate host, the organism is found in cysts in muscle and other tissues. These tissue cysts are infective if they are eaten uncooked by the dog and possibly other canids.

The infection in cattle is life long and is transmitted from infected dam to offspring before birth. This mechanism perpetuates the infection from generation to generation and effectively maintains the infection in a herd. Before the dog was recognized as the definitive host, this was the only known method of transmission.

Clinical signs

Abortion is the only clinical sign observed in infected cows. Cows of any age may abort between 3 months of gestation and term but most *Neospora* induced abortions occur at 5-6 months of gestation. The abortions can occur at any time of the year and may infect only a few cows or as many as 30% of cows in a herd.

Fetuses may die in utero, be resorbed, mummified, decomposed, stillborn, born alive but diseased or born clinically normal but chronically infected. Animals that abort may abort again in subsequent pregnancies. Infrequently calves are born with signs that their central nervous system has been damaged and/or are unable to stand.

Diagnosis

Post mortem examination of an aborted fetus and the demonstration of the *Neospora caninum* organism is needed to make a diagnosis. The examination of blood samples from aborting cows can be used to confirm the postmortem diagnosis.

Treatment

There is currently no treatment to prevent the transmission of infection from infected dam to fetus.

Control

Although there is limited information on the frequency of shedding of infective organisms by the dog, it is important to prevent fecal contamination of cow feed or water by dog feces. Dogs should not be allowed to eat aborted fetuses, fetal membranes or dead calves. (This is the ideal way to complete the life cycle of the parasite.) Feed should not be stored on piles where dogs or other wild animals have easy access.

There is no treatment other than culling to prevent the transmission of the infection from dam to calf. There is no proven vaccine for preventing *Neospora* induced abortion in cattle or the shedding of infective organisms by dogs. There is a conditionally licensed vaccine available in Pennsylvania. For conditional licensing the vaccine has demonstrated it can cause an antibody response in cattle and that is safe (no decrease in milk production or adverse reactions). It has not been shown to be effective at controlling the transmission of this organism.

Animal Housing

Ventilation Systems: Air Quality Is the Goal

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Livestock shelters can be ventilated naturally or mechanically, but the common goal is the same - provide good air quality for the animals and their caretakers.

Good air quality is essential for good animal health and efficient production. Poor air quality can lead to respiratory complications, reduced animal comfort, and wet, undesirable conditions.

Designed and managed properly, ventilation systems can provide good quality air to the entire animal space in dairy, swine and beef shelters. Before evaluating or selecting a ven-

tilation system, it is important to understand what "good air quality" is.

The levels of moisture, gases, and pollutants typically determine the quality of a volume of air. These levels are controlled by bringing fresh air into the animal area, mixing it with air already in the building, then exhausting the combination from the building.

An air exchange is accomplished by creating a pressure difference between the inside and outside of the building. Mechanical ventilation systems use fans and inlets to create the pressure difference, while naturally ventilated structures rely on wind and heat produced by the animals.

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