

# When Anaplasmosis Strikes



Early detection, treatment is key to animal survival.

Story & photos by Joann Pipkin

**W**hen one of Mark Womack's best donor cows went off feed, it was only natural for him to want to know why.

"I had her up getting ready to flush her," Womack explains. "She had calved about four weeks earlier."

When the cow became aggressive, the veteran Missouri Angus breeder knew that wasn't her typical attitude.

"I suspicioned she might have anaplasmosis, so I got her in the chute for a closer look," he says.

The cow had all the classic signs of the disease. Womack drew blood from her tail; it resembled water and did not clot. The inside of her vulva lips were pale in color, and her gums further proved she was very anemic.

Womack immediately treated the cow with tetracycline, commonly used to combat anaplasmosis.

"I thought I caught it early enough to get her over it," he notes. "About 6 hours after treatment she was acting some better. She got

up and went to water; but, about 10 hours later, she was dead."

Womack says he believes it was added stress that ultimately led to anaplasmosis overtaking the cow. A cut on her foot and calving likely opened the door for the disease to overcome her.

A number of cattlemen throughout Kansas and Oklahoma, as well as southern Missouri, have been plagued by cases of anaplasmosis late last fall and early winter.

Gregg Hanzlicek, veterinarian and director

of production animal field investigations for the Kansas State Veterinary Diagnostic Laboratory, has been with the university's diagnostic lab for five years. He reports the number of positive herds in Kansas this past summer is something never seen before.

Barry Whitworth, area food animal quality and health specialist for Oklahoma State Cooperative Extension Service, says some in the industry believe cattle movement affects how new strains of the disease are introduced.

"We may be seeing different strains of the bacteria causing anaplasmosis, making it more prevalent," he says. "We may be seeing more stressors that have compromised the immune systems of affected cattle."

Because the disease is not reportable and does not have statistical information behind it, Whitworth said it's difficult to know how bad anaplasmosis is.

"There are a lot of unknowns about this disease," he says. "The more research is done,

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**— Ted Dahlstrom**

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the more questions come up.”

Southwest Missouri veterinarian Ted Dahlstrom says, “Any added stress to that animal from movement or exertion will exhaust its reserves, and it’s going to be more likely to show clinical signs of the disease even though it might be lowly infected.” A sick animal will have lost a lot of red blood cells and, therefore, doesn’t have the ability to carry oxygen due to anemia.

### What is anaplasmosis?

Anaplasmosis is caused by an organism known as *Anaplasma marginale*. It is transmitted primarily by arthropod vectors such as ticks and biting flies, according to Craig Payne, University of Missouri Extension veterinarian.

“Ticks are recognized as a significant mode of transmission because the organism carries out part of its life cycle in the tick,” Payne says.

Hanzlicek adds that male ticks are called intermittent feeders.

“This means they’ll feed on an animal, and then they’ll drop off to find another animal to feed on,” he explains. “If the first animal is infected, the tick will consume the bacteria, which reproduces in the tick’s body. The tick falls off and finds another animal that may not be infected. The tick then transfers the bacteria through its saliva while feeding on the uninfected animal.”

Mechanical disease transmission may also occur through the use of blood-contaminated equipment, such as castration or dehorning tools.

“For herds that are already positive, one of the major ways this disease spreads from animal to animal is by not changing needles [when vaccinating],” Hanzlicek says. He suggests changing needles and disinfecting tattoo pliers and dehorning instruments between animals as ways to mitigate the risk



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of infecting other animals in the herd.

Once an animal is infected, it takes an average of 21 days before clinical signs of the disease appear. Thus, Payne says, most anaplasmosis cases are seen in the fall, but they can be seen later if the arthropod vector season is extended in a given year.

Once bitten, the cow may not immediately show signs of disease, Dahlstrom adds. “This

could be a disease that may not show itself even until January or February if the animal was infected in late fall.”

Hanzlicek reports that in a recent Kansas Veterinary Diagnostic Lab study researchers collected hundreds of ticks from around Kansas. More than 33% of all the ticks collected tested positive for *A. marginale*.

### The telltale signs

Observation is critical in detecting anaplasmosis.

“If you have that one cow or group of cows that are just hanging back behind the rest of the herd and are a little slow, it’s because they don’t have a good oxygen reserve and basically are having a hard time breathing,” Dahlstrom says.

According to Payne, the organism infects red blood cells so the animal’s immune system removes those infected cells, destroying them in the process. Over time this leads to anemia. The severity of the infection and anemia dictates the severity of clinical signs.

In the early phases of the disease, clinical signs such as fever, depression and pale

### Vaccine available, but not without red flag

While a non-USDA-approved vaccine is available to help cattlemen combat bovine anaplasmosis, the bottom line is it’s a complex disease. It is so complex, in fact, that developing a cross-protective vaccine is far from easy.

In Oklahoma, for example, the disease is endemic. The state’s intense cattle population further complicates development of a vaccine that will gain approval from the USDA.

The current vaccine, developed at Louisiana State University, is made from one strain of anaplasmosis, so it is not known what strains the vaccine is cross-protective against, according to Katherine Kocan, an Oklahoma State University (OSU) regents professor and anaplasmosis researcher. The original vaccine was created at OSU in the 1960s.

“The problem with the old vaccine is that it’s made from organisms that are harvested from infected red blood cells,” Kocan says.

Because *Anaplasma marginale* may be transmitted by both arthropod vectors and mechanical means, it creates a complex situation, Kocan says. When you get anaplasmosis in your herd, you have to have a strategy to keep the cattle from becoming exposed and developing clinical anaplasmosis. The two approaches are to maintain a clean herd or to keep your animals on preventative tetracycline.

mucous membranes are often recognized along with reduced appetite, drop in milk production and possibly constipation.

“As the disease progresses, these clinical signs worsen and animals will begin to develop a yellow tinge around their eyes, vulva and teats,” Payne notes. “They may also develop muscle weakness or be unable to stand, and death may be the end result.”

It is not uncommon for severely anemic animals to become aggressive or excited when handled and die a short time later due to the lack of oxygen in their system, he adds.

“Clinical signs seem to be more severe in older animals,” Payne says. “A possible reason for this is older animals are less efficient at producing red blood cells when compared to younger animals, therefore older animals would be less tolerant of an infection.”

In cows that are not eating, B vitamins and rumen inoculants might stimulate appetite, says Whitworth. “Any animal less than a year old in age may be infected, but tends to not have symptoms of the disease. From 1 to 2 years of age, we may see some symptoms, and the animal typically responds well to treatment.”

### Analyzing treatment options

“Make sure you check your cattle daily,” Whitworth suggests. “The earlier the treatment, the better the opportunity we have for getting that cow back on her feet and well.”

Long-acting injectable tetracyclines are common treatments for cattle with anaplasmosis.

Feed-grade chlortetracycline (CTC) is approved for control of anaplasmosis, but is not approved for treatment, Payne notes.

Cattlemen should consult their veterinarian about using feed-grade antibiotics, Hanzlicek says. Medically important feed-grade antibiotics such as CTC will be moved from over-the-counter availability to requiring a veterinary feed directive (VFD) by the end of 2016.

Treatment at onset is critical, Dahlstrom emphasizes. Without treatment, a large percentage of infected animals will die, especially older animals.

“If you think you have anaplasmosis, it’s worth your time and effort to get with a veterinarian, survey the herd and develop a treatment plan,” Dahlstrom says. “Think about what you can do to prevent it in the rest of the animals.”

In severely sick animals, researchers have found that treating for anaplasmosis is not effective. Sometimes when left alone, the

animal will bounce back on its own, and treating with tetracycline is effective only when given early in the infection.

There is a non-USDA-approved vaccine for anaplasmosis; however, it doesn’t prevent the disease.

“If the cattle are infected, though, it does significantly decrease the chance of them dying. It increases survivability,” Dahlstrom says.

While feeding tetracycline prevents the disease if consumed in adequate amounts, Whitworth says, “This does not protect all cows because some eat too much and some eat too little. Bulls also have trouble consuming enough mineral to be adequately protected, so they make good candidates for vaccinations.”

Meeting nutrition and mineral supplementation needs is critical so immune systems are not compromised, Whitworth says.

### Other disease considerations

Despite treatment for the disease, if an infected animal survives, it will be a carrier for the rest of its life, Hanzlicek says. “Therefore, it is going to be a source of infection for the rest of the herd.”

If an animal is a carrier and is reinfected, it will not show the clinical signs the second time, he says.

“That is really the only good thing about the disease is a lifelong immunity to showing clinical signs,” Hanzlicek says. Some research

suggests that up to 16% of the calves born to anaplasmosis-positive cows will also be anaplasmosis-positive carriers at birth.

Ensuring all new cattle in the herd are free of anaplasmosis by taking a blood test is crucial, he adds. New arrivals should be quarantined until test results confirm if disease is present. Payne noted that new arrivals may be better off if they are anaplasmosis carriers as opposed to being free of the disease because carriers that are reinfected will not show clinical signs the second time.

All in all, producers should observe their cattle frequently for illness and intervene early in the disease process.

“Consulting with your veterinarian and developing a prevention and control program will be to your advantage,” Whitworth says. “In Oklahoma, anaplasmosis is and always will be a problem.”

For Angus breeders like Mark Womack, anaplasmosis is especially challenging to treat when you think you’ve done everything right to prevent it. He recalls several years ago when he had another problem with the disease. That time, his cows were even consuming CTC mineral.

“Anaplasmosis is a complex disease,” Payne notes. “It can be problematic any year, and we often hear of pockets in the state where outbreaks are severe. This year was no exception.”

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**Editor’s Note:** Joann Pipkin is a freelance writer and cattlemaster from Republic, Mo.



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