

## **The Challenge of Caprine Arthritis Encephalitis Syndrome**

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Caprine Arthritis Encephalitis Syndrome – often referred to as CAE – is a viral infection that exists in challenging frequency within the U.S. goat herd. In a simple sense, CAE is a form of arthritis that impacts a goat's mobility and adult quality of life. In rare cases, considered extreme, CAE can cause brain inflammation in goat kids under the age of six months.

The most direct infection route for CAE is the transmission from doe to kid. Infected colostrum and milk account for almost 90 percent of CAE infections, while other bodily fluids such as saliva, blood or mucous can also spread the infection. The virus genome integrates into the host DNA of white blood cells in the affected animal, so any body secretions that contain these cells are potential sources and risks for CAE exposure and transmission. As a result of this DNA integration, CAE can remain dormant for months or even years before a physiological or environmental stressor activates the virus to reproduce. Ovine Progressive Pneumonia (OPP) is a very similar disease in sheep, and viral transmission of OPP or CAE from sheep to goats or goats to sheep can and does happen.

Physical symptoms of CAE can vary, and subclinical infections often go undetected. It is believed that some 75 percent of North American goat herds are infected and as many as 90 percent of the goats in these herds are asymptomatic. More clinical cases may result in harder-than-normal udder texture, mastitis, oversized and/or knobby knees (not due to a specific injury), a decrease in or ceased milk production, significant weight loss and even severe or fatal pneumonia.

In any production goat herd, profitability is directly impacted by the long-term health of the herd. CAE infection is persistent and life-long, resulting in earlier culling or a shorter lifespan, decreased milk production capacity and reduced growth and rate of gain in offspring. CAE-infected does may produce 25 to 30 percent less milk than non-infected does in the same herd. For meat goat operations, where multiple births and rate of gain are particularly important, CAE can cause low birth weights, lower milk production and growth challenges in kids.

As awareness and concern for CAE has grown, producers of breeding stock genetics have been pushed to establish – and maintain – a CAE disease-free herd status, ensuring that herd bucks and does are clean. Not only will producers not pay market price for infected animals, the presence of the disease in the herd can, and should be a deterrent of purchase from the herd overall.

There is no known cure for CAE, nor is there an effective, commercially available pre-infection vaccine. Therefore, herd monitoring and careful management are required to reduce the incidence and prevent transmission of the disease. Goat producers should routinely test the entire breeding herd for CAE, ideally prior to kidding. This process will help identify the majority of CAE-positive animals. If the goat has produced antibodies, that means it has been exposed to the disease and has the virus. These goats will test positive, and are capable of spreading CAE to the rest of the herd. The ELISA test is generally recognized as the most reliable CAE test method.

However, "false negatives" are still possible when testing for CAE. Animals with a dormant infection are likely to test as false negative; without live virus to stimulate the immune system, an indirect test such as and ELISA or the AGID test will not be effective. There is also a potential for actively infected kids producing false negatives if they are tested before their immune system can adequately recognize the virus and produce antibodies. Kids may also test false positive if they are consuming pasteurized milk or colostrum from CAE-positive dams, as antibodies in the milk, absorbed through the intestinal tract and into the serum, take several weeks to clear from the serum after weaning. For this reason, testing should not be performed on kids under 7 – 9 months of age.

Prevention is critical to managing CAE and must begin at birth. Newborns should be separated from their dams immediately after birth, before the doe is allowed to lick or clean the kid, and before the kid is allowed to nurse. Newborns should have their navels dipped with concentrated iodine, and be fed a colostrum replacement (or pasteurized colostrum) within 30 minutes of birth. A high-quality colostrum replacement formulated specifically for goat kids is ideal, but heat-treated colostrum from a CAE-negative doe can serve as a good alternative and proactive CAE prevention management.

The CAE virus is quite fragile and does not do well outside of a host. Therefore, contaminated bodily fluids, once dried, are essentially non-infective. A 10 percent solution of household bleach can be an effective disinfectant when sprayed on contaminated areas.

After the first feeding of colostrum replacement, kids should be raised on a diet of high-quality milk replacer, again specifically formulated for goats, or pasteurized goat milk. Lessons can be learned from the dairy cattle industry, which has shown that young animal nutrition provided through milk replacers has a direct and positive impact on the growth and future productivity of the calf. Kids are no different. The best nutrition source should be considered an investment in the herd. It is important to note however, that kids do have higher nutritional needs than dairy calves, and should not be fed cattle milk replacers as a substitute for doe milk replacers.

**Sources:**

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