Coccidiosis, the Most Common Cause of Diarrhea in Young Goats

NC STATE EXTENSION

Animal Science Facts

What Is Coccidiosis?

Coccidiosis is caused by microscopic protozoan parasites called coccidian *(Eimeria* spp.). Coccidia go through a complex "life cycle" in the intestinal cells of goats. In the process, they produce large numbers of eggs (technically called oocysts) that are passed in the feces. In the process of growth and multiplication in the goat intestinal epithelial cells, the coccidia may destroy many intestinal cells. This may cause diarrhea and other signs of the disease coccidiosis.

Coccidiosis is the most common cause of diarrhea in goats between 3 weeks and 5 months of age. This is especially true when goats are housed in confinement. Coccidiosis commonly strikes young goats shortly after weaning because of the stress of being suddenly separated from their dam.

Nearly all (or most) adult goats carry coccidia in their intestines. The very small eggs or oocysts passed in the feces of adult goats hatch in the environment and goats pick up the infective stages of the coccidian either directly from the manure or in contaminated feed and water. When present in small numbers, coccidia normally are not a problem. Therefore, the number of coccidia that invade the intestines will determine the severity of the infection. There are many different species of coccidia, some being non-pathogenic, and others being either mildly, moderately, or severely pathogenic. Feces may, for example, contain a high number of nonpathogenic coccidia eggs, or a low number of more pathogenic coccidia eggs. In general, if the animals do not show any clinical signs (diarrhea, etc.), the infection is probably not significant.

In the presence of appropriate temperature, moisture and oxygen, coccidia eggs (oocysts) passed in the feces "hatch" (technically referred to as sporulation) and become infective in two to several days and can readily contaminate feed and water. Upon ingestion by other goats, these infective forms (sporocysts) pass through the stomach and into the intestines. Then the sporocysts invade the intestinal cells and undergo several changes. Sick, young and stressed goats (weaning is extremely stressful on kids) are more susceptible and in these cases the coccidia may proliferate. It is this damage, the destruction of cells lining the intestines and damage to tissues, which give rise to the signs of coccidiosis.

When a coccidiosis outbreak begins, only good sanitation and isolation of sick animals will prevent its spread through the herd. Coccidia eggs are resistant to many disinfectants and may survive more than a year in the environment. They can stay alive in a pasture as long as they are in a moist and

dark environment, but will die when temperatures drop below freezing. Goats that survive coccidiosis develop a degree of immunity to future coccidian problems.

What Are the Signs of Coccidiosis?

The signs of coccidiosis are divided into two categories: subclinical and clinical. Subclinical cases result in a decrease in feed intake and weight gain, and are difficult to detect because of the absence of diarrhea. Clinical cases can vary from some loss of appetite and decrease in weight gain and slight, short lived diarrhea to severe cases involving great amounts of diarrhea, fluid feces containing mucus and blood, persistent straining in attempt to pass feces, loss of weight, rough hair coat, dehydration, and in some cases death in as short as 24 hours. The primary pathology associated with coccidiosis involves intestinal cell destruction. Scarring and damage to the lining of the intestines following treatment or recovery may result in permanently unthrifty and stunted goats because the ability of these goats to absorb food is impaired.

Diagnosis is based on history/signs, microscopic examination of feces, and post-mortem analysis. Presence of coccidia eggs in the feces of normal goats indicates that the goats are infected, but not necessarily diseased. Coccidia eggs (oocysts) can be found in the feces of most goats, including healthy goats.

How to Minimize the Risk and/or to Prevent Coccidiosis?

Good husbandry practices are the best preventive measures against coccidiosis. Regular removal of manure and wasted feed, not feeding on the ground, designing feeders and water systems that minimize fecal contamination, providing a clean source of water, cleaning water tanks and feeders regularly, making sure that watering systems do not leak and that sufficient sunlight enters buildings are examples of such husbandry practices. If goats are kept on solid floors during the winter, maintaining clean and dry bedding is important.

On farms where coccidiosis problems keep recurring, it may be advisable to treat the herd preventively.

Several choices are available depending on the situation:

1. Using feeds containing a coccidiostat:
    - Feeds containing decoquinate (brand name Deccox®) are available commercially and **US FDA-approved for prevention of coccidiosis in non-lactating goats.**
    - Another coccidiostat, monensin (brand name Rumensin®), is also **US FDA-approved in feed for prevention of coccidiosis in non-lactating goats.**

- Lasalocid (brand name Bovatec®), another coccidiostat, has **US FDA approval for sheep but not goats.**

2. Drenching goats with an oral dose of amprolium solution (Corid® - 9.6%). **This drug is not approved by the US FDA for use in goats.** In some cases, it is advised to treat all adult goats, yearlings and, especially, kids because kids are very susceptible at weaning.
3. Alternatively, adding amprolium (Corid®) to the drinking water. During treatment, it is important to limit the water supply of the goats and to make sure that they do not have access to any other water source. Be aware that adding amprolium (Corid®) to the drinking water does not assure that all animals will receive an appropriate dose of amprolium.

How to Treat Coccidiosis?

When goats come down with the signs of coccidiosis:

1. Drenching them orally with amprolium (Corid® - 9.6%) **for 5 consecutive days.** ***This is often considered an effective form of treatment. This is an extra-label use, as amprolium is not labeled for goats, and a veterinarian needs to prescribe its use.***
2. Sulfa drugs (sulfadimethoxine-sulfamethazine) such as Albon® and Sulmet® are most effective in the early stages of acute infections when coccidia are multiplying rapidly. Sulfa drugs may not cure coccidiosis but are often given to infected goats to prevent secondary infections such as bacterial enteritis. **This is also an extra-label use, as *sulfadimethoxine and sulfamethazine are not US FDA labeled for goats, and a veterinarian needs to prescribe its use*.**

Advice and Caution

1. **Whether treating goats against coccidiosis preventively or goats having come down with the clinical signs of coccidiosis, always consult first with an animal health specialist (local veterinarian, cooperative extension agent, etc.) for specific directions about which product and dosage to use, the route of administration (feed or oral), meat and milk withdrawal times, etc.**
2. A vitamin B1 (thiamine) deficiency can be created by using amprolium (Corid®) too often. Some animal health specialists advise giving animals injections of thiamine hydrochloride when treating goats with amprolium.
3. Always obtain and adhere to appropriate meat withholding times following any extra-label use of drugs.

What Are the Important Facts to Remember About Coccidiosis?

1. Coccidia are very host specific. Therefore, the species of coccidia that infect goats only affect goats. Coccidia found in birds, cattle, dogs, and rabbits will NOT infect goats. For some coccidia, there may be some cross-infection between sheep and goats.
2. Virtually every goat has some level of infection, but illness occurs only in some animals. Fecal samples from virtually any goat of any age, sex, breed, and physiological stage can contain coccidia eggs.
3. **THE DISEASE IS ALMOST ALWAYS GOING TO OCCUR IN YOUNG ANIMALS. KIDS LESS THAN 5 MONTHS OF AGE ARE ESPECIALLY SUSCEPTIBLE.** Kids will become infected early on from the environment. Adults will have immunity to the parasite that is reasonably effective in preventing disease, but not infection.
4. The primary sign of coccidiosis is diarrhea. Look for the signs of the infection in stressed animals. Happy, well-nourished kids left with their dam may show no diarrhea until they are weaned. **THE STRESS OF WEANING MAY DEPRESS IMMUNITY ENOUGH FOR THE COCCIDIA TO GET THE UPPER HAND AND CAUSE INFECTION.**
5. Good husbandry practices are the best preventive measures against coccidiosis. These include measures such as removing manure, not feeding off the ground, not letting goats jump into feeders (a real challenge), cleaning feed troughs and water tanks regularly, etc. Drugs used to treat coccidia include amprolium (Corid®), decoquinate (Deccox®), monensin (Rumensin®), lasalocid (Bovatec®) and sulfadimethoxine (Albon®).

As of this writing, decoquinate and monensin were approved for use in non-lactating goats. However, amprolium, lasalocid, and sulfadimethoxine were not approved for goats. Prior to use, be sure to obtain current information on approvals and appropriate withdrawals following use. Source: Minor Use Animal Drug Program, accessed 10/28/09.

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